United States Department of the Interior
Bureau of Land Management

Albuquerque Field Office

Final

Environmental Impact Statement for Riparian and Aquatic Habitat Management in the Albuquerque Field Office – New Mexico

Volume 2: Proposed Riparian and Aquatic Habitat Management Plan

August 2000

BLM/NM/PL-00-010-1040

Mission Statement

It is the mission of the U.S. Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/NM/PL-00-010-1040

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ABSTRACT

This U.S. Bureau of Land Management (BLM) Albuquerque Field Office Riparian and Aquatic Habitat Management Plan (HMP) presents an adaptive management strategy for restoring and protecting riparian areas administered by the Albuquerque Field Office. Riparian habitats are critical, but very small, areas in relation to the large amount of land administered by the BLM. Riparian areas under BLM jurisdiction are often only small segments of a larger area over which the BLM has no management responsibility or authority. The BLM plays an important, but limited, role in improving and protecting riparian habitats in New Mexico.

This HMP presents a sequence of tasks for individual riparian areas that, when implemented, will provide a systematic method of achieving proper functioning condition and long-term stewardship of threatened and endangered species habitat.

Although the BLM has been implementing restoration and protective actions for selected riparian areas in New Mexico for over a decade, development of measurable goals and endpoints for restoration activities has not been undertaken because of informational and planning needs. For example, additional scientific data for riparian habitats will be obtained and utilized, and proactive strategies for accomplishing riparian-wetland management objectives will be developed and implemented in the HMP. The HMP assigns highest priority to implementing those management practices identified in current BLM management guidance for restoring and protecting all riparian habitats under BLM jurisdiction. For riparian areas, the HMP requires a specific focus on riparian management; decisions regarding other land management activities will be constrained to limit or prevent any adverse impact on riparian areas.

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ABBREVIATIONS/ACRONYMS

ACEC	area of critical environmental concern
AUM	animal unit month
BLM	U.S. Bureau of Land Management
DEIS	draft environmental impact statement
EIS	environmental impact statement
FAP	functioning at potential
FAR	functional – at risk
FEIS	final environmental impact statement
HMP	habitat management plan
MOU	memorandum of understanding
NF	nonfunctional
NMDG&F	New Mexico Department of Game and Fish
PFC	proper functioning condition
TR	technical reference
U	unknown
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

1.1 REASONS FOR PREPARATION

The purpose of this Habitat Management Plan (HMP) is to provide guidance for the restoration and protection of riparian habitats under the jurisdiction of the U.S. Bureau of Land Management (BLM) in the Albuquerque Field Office, New Mexico. The goal of riparian-wetland area management is to maintain, restore, improve, protect, and expand these areas so that they are in proper functioning condition for their productivity, biological diversity, and sustainability. Although the BLM has been actively managing riparian habitats in pursuit of this goal for over a decade, the need to place special emphasis on these important resources was triggered by legal action against the BLM. The lawsuit was settled when the BLM agreed to complete an Environmental Impact Statement (EIS) for Riparian and Aquatic Habitat Management in the Albuquerque Field Office, including this HMP.

Riparian habitats constitute a small, but critical, percentage of lands administered by the BLM in New Mexico. Figures 1.1 through 1.4 illustrate the riparian habitats under BLM jurisdiction in the context of the total surface lands contained within, and administered by, the Albuquerque Field Office. Figure 1.1 shows the Albuquerque Field Office in relation to the rest of New Mexico; Figure 1.2 shows the distribution of riparian habitats under the jurisdiction of the BLM in the Albuquerque Field Office; Figure 1.3 shows the major physiographic features in the Albuquerque Field Office area; and Figure 1.4 shows the management jurisdiction of land areas in the Albuquerque Field Office.

1.2 ECOSYSTEM DESCRIPTIONS

Riparian-wetland areas are directly influenced by permanent water and have visible vegetation or physical characteristics that reflect that influence. Although lake shores and stream banks are typical riparian-wetland areas; springs, seeps, and normally dry drainages that have a shallow water table with vegetation requiring permanent water also are classified as riparian-wetland areas. Riparian-wetland areas are generally grouped into two major categories: (1) lotic — moving (linear) water habitats such as rivers and streams; and (2) lentic — standing (open water) water habitats such as lakes, ponds, seeps, and meadows. For ease of discussion, the lotic riparian-wetland areas are referred to in this document simply as riparian areas; the lentic riparian areas are referred to as wetland or spring/seep areas. Section 1.2.1 describes the 21 specified riparian areas that occur along several of the streams within the Albuquerque Field Office area. Sections 1.2.2 and 1.2.3 discuss the specified wetland and spring/seep areas, respectively.

In semiarid settings such as the lands managed by the Albuquerque Field Office, even small riparian areas often play a particularly important role in maintaining overall ecosystem health, despite their comparatively small size and (frequently) dispersed geographic distribution. The ecological functions of riparian communities are determined by their composition [species, species richness, presence of exotics (introduced species)], vertical structure (canopy cover and architecture), horizontal pattern (patch size, shape, area, and their relative locations), and total area of continuity (Harris 1999).

One function of riparian areas is integration of geomorphic, hydrologic, and vegetative processes in a way that builds soils, delivers

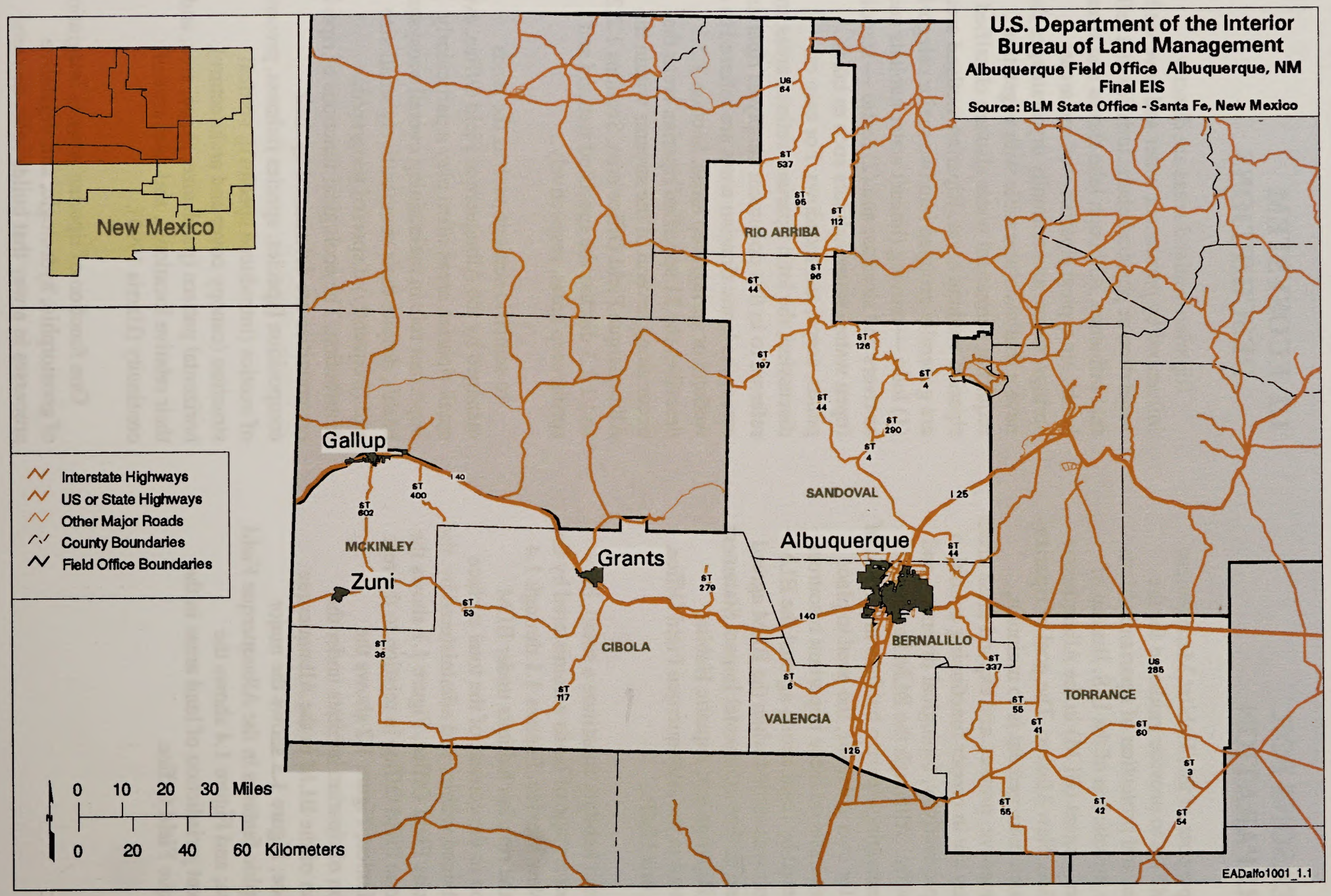

FIGURE 1.1 Counties, Communities, and Roads in the Area under the Jurisdiction of the Albuquerque Field Office

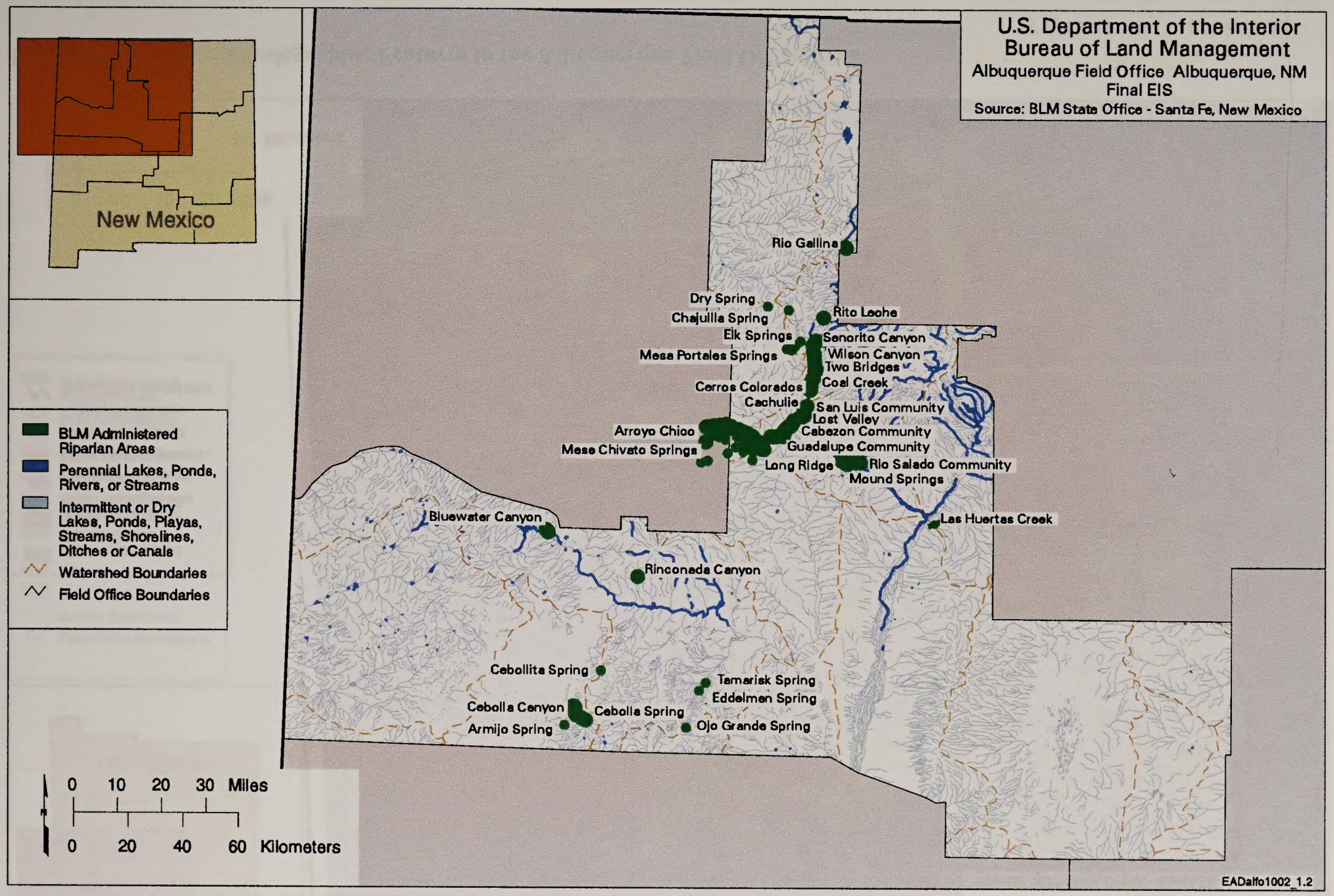

FIGURE 1.2 Riparian Areas under the Jurisdiction of the Albuquerque Field Office

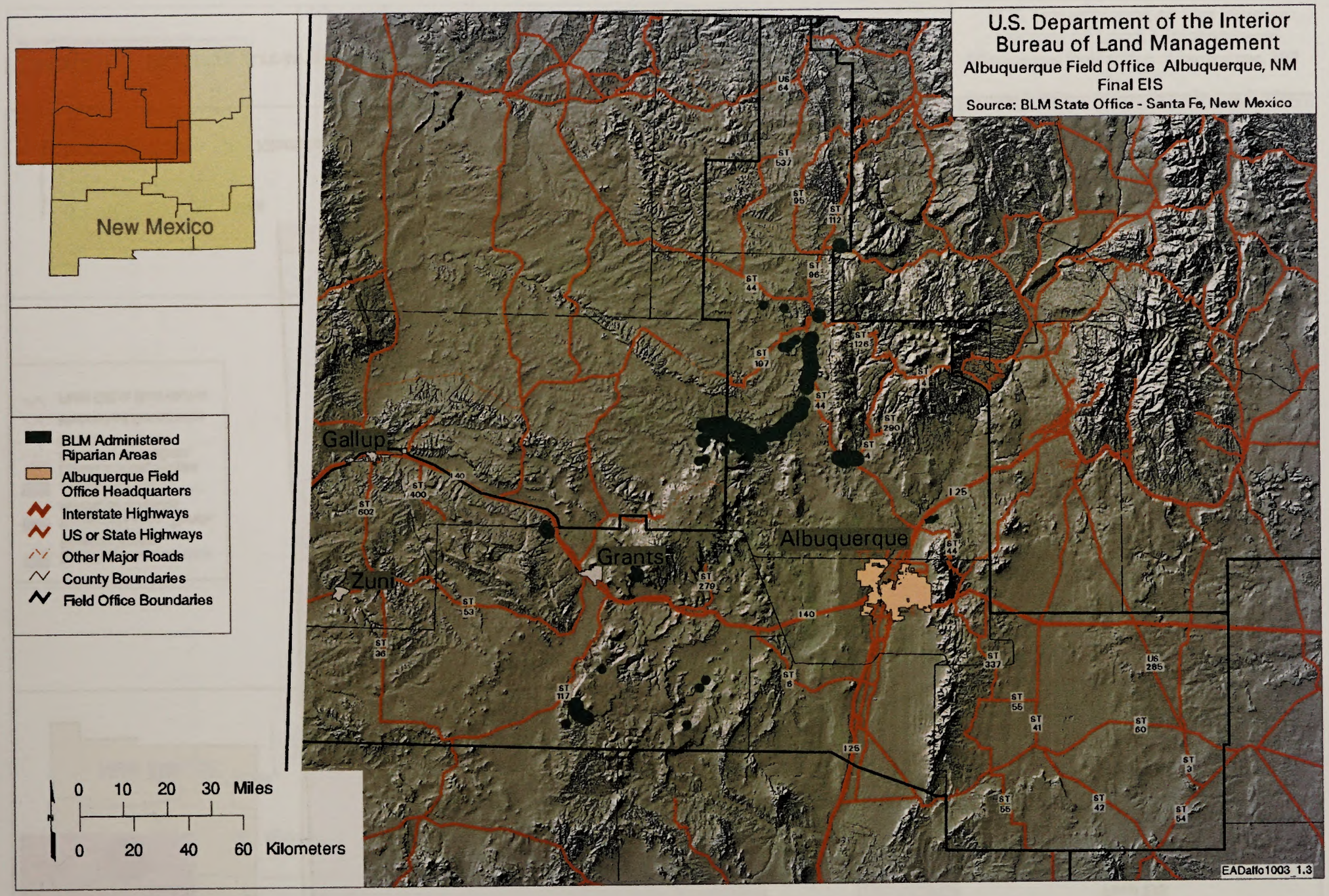

FIGURE 1.3 Major Physiographic Features in the Albuquerque Field Office Area

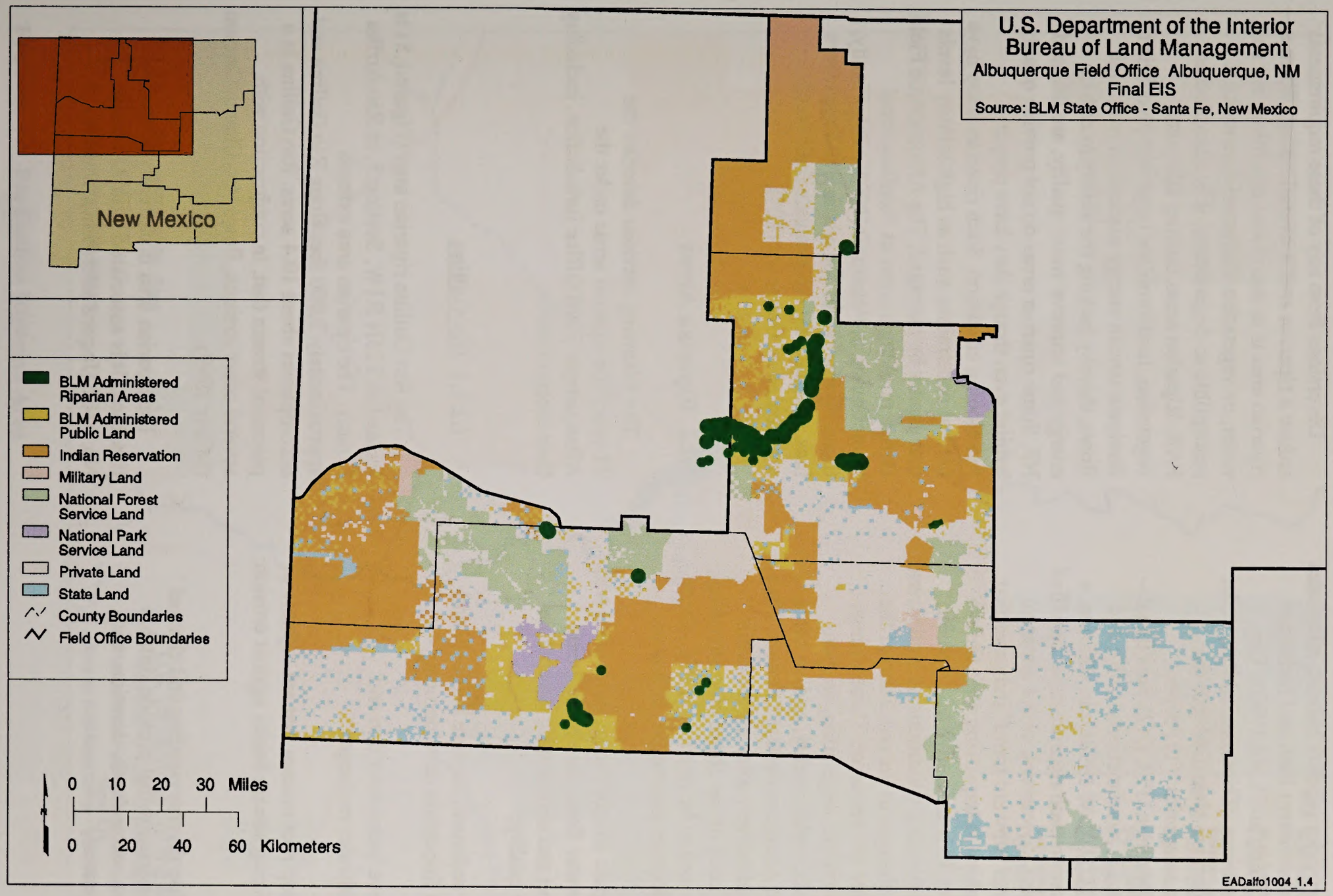

FIGURE 1.4 Albuquerque Field Office Land Status

clean water, provides wildlife habitat, attenuates floods, reduces sediment loss, and recharges groundwater (Lamb and Lord 1992). The functional conditions of riparian habitats under BLM jurisdiction are classified into the following four categories: (1) Proper Functioning Condition (PFC); (2) Functional – at Risk (FAR); (3) Nonfunctional (NF); and (4) Unknown (U) (BLM 1998a). In addition, a trend is assigned to each riparian area classified as FAR [upward, downward, or not apparent (i.e., static)]. An "upward trend" indicates that the riparian habitat is improving with time; a "downward trend" is indicative of a riparian area with deteriorating conditions. A static trend indicates that changes in the condition of the riparian area are not apparent. These ratings reflect hydromorphic, vegetation, erosion/ deposition, soils, water quality, and, in some cases, external nonsystem-related factors. They are applied qualitatively after a systematic assessment of each of the above characteristics.

For a riparian area to be rated as in PFC, there needs to be adequate vegetation present to:

- Dissipate stream energy associated with high water flow, thereby reducing erosion and maintaining acceptable water quality;
- Filter sediment, capture bedload, and aid in floodplain development;
- Improve water retention and groundwater recharge;
- Develop root masses that are capable of stabilizing stream banks against erosion; and
- Develop diverse ponding and channel characteristics that provide suitable habitat, water depth, duration, and temperature.

Diversions from any of these requirements reduce a riparian area's overall rating. When a riparian area is in functional condition, but soil, water, or vegetation characteristics make it susceptible to degradation, it is classified as FAR. Riparian areas lacking adequate vegetation, landforms, or large woody debris to dissipate stream energy associated with high flows, thereby lacking the ability to reduce energy and improve water quality, are deemed NF. Some riparian areas do not provide quality habitat even though they have proper functioning condition. Such riparian areas have natural constraints, such as high salinity levels that cannot be managed. The Albuquerque Field Office rates such areas as Nonfunctional (Functioning at Potential) [NF(FAP)]. Finally, those riparian areas for which BLM managers lack adequate data to evaluate their condition are labeled as Unknown (UN).

1.2.1 Riparian Areas

The following sections describe the 21 specified riparian areas under the Albuquerque Field Office jurisdiction, including their categorization.

1.2.1.1 Rio Gallina

The Rio Gallina riparian area (Figure 1.5) is located at T23N R1W, Section 5, in Rio Arriba County. The riparian area extends approximately 2,000 feet along Rio Gallina and encompasses about 10.4 acres. Rio Gallina is a perennial stream that, in conjunction with several other streams, flows into Chama Canyon (Miller 1999).

The riparian area is currently grazed by livestock. It is associated with Allotment No. 6102 (Jaquez allotment), which is

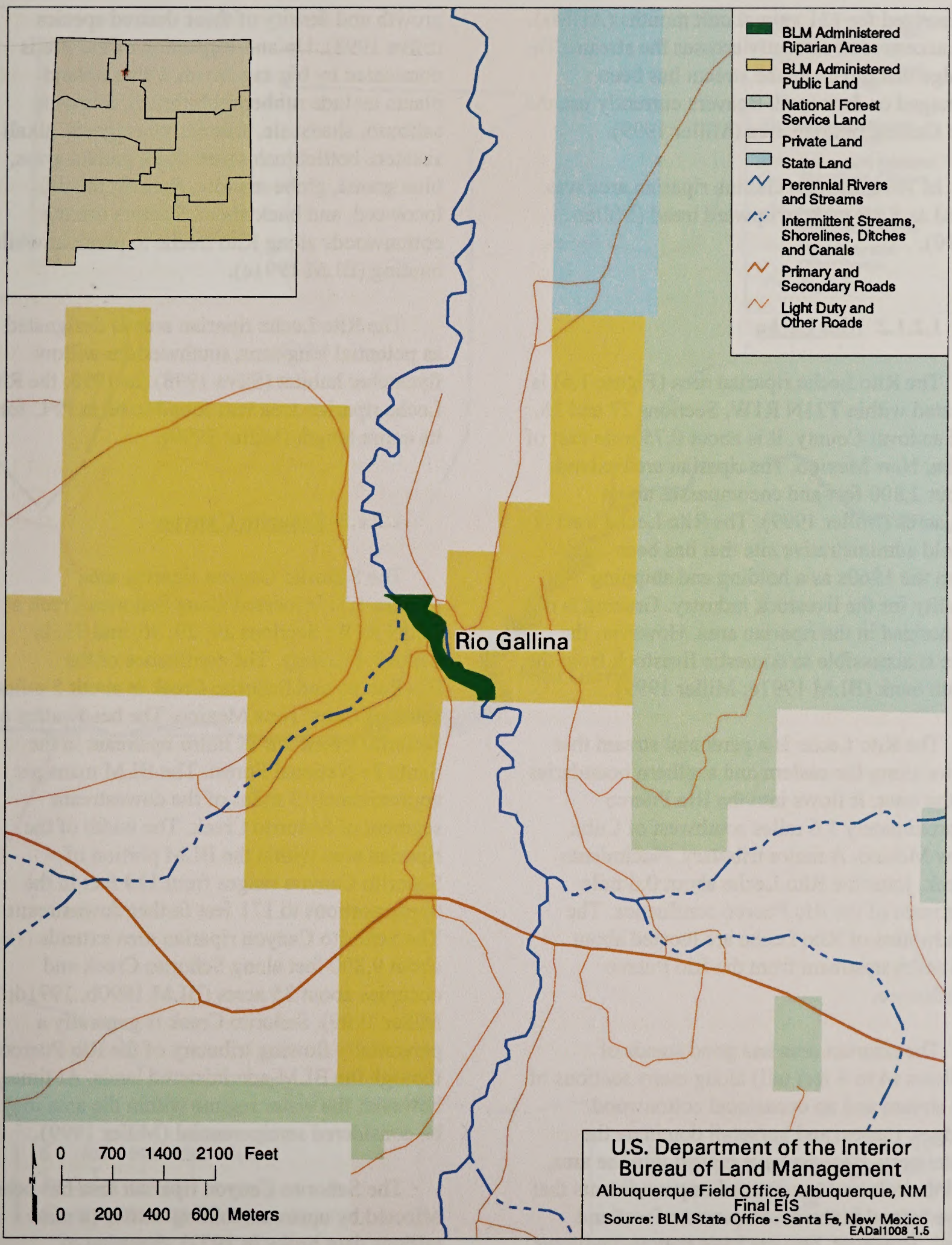

FIGURE 1.5 Rio Gallina Riparian Area

authorized for 121 animal unit months (AUMs). An access road currently crosses the stream. The bridge that did cross the stream has been damaged or destroyed. Beavers currently use the Rio Gallina riparian area (Miller 1999).

In 1998, the Rio Gallina riparian area was rated as FAR with an upward trend (Miller 1999).

1.2.1.2 Rito Leche

The Rito Leche riparian area (Figure 1.6) is located within T21N R1W, Sections 27 and 28, in Sandoval County. It is about 0.75 mile east of Cuba, New Mexico. The riparian area extends about 2,800 feet and encompasses about 9.6 acres (Miller 1999). The Rito Leche tract is an old administrative site that has been used from the 1960s as a holding and shipping facility for the livestock industry. Grazing is not authorized in the riparian area. However, the area is accessible to domestic livestock from the south bank (BLM 1991c; Miller 1999).

The Rito Leche is a perennial stream that flows along the eastern and southern boundaries of the tract. It flows into the Rio Puerco approximately 1.6 miles southwest of Cuba, New Mexico. A major tributary, Nacimiento Creek, joins the Rito Leche about 0.6 mile upstream of the Rio Puerco confluence. The headwaters of Rito Leche are located about 8.8 miles upstream from the Rio Puerco confluence.

The riparian area has good stands of willows (4 to 6 feet tall) along many sections of the stream and an occasional cottonwood. Sedges, rushes, and horsetail dominate the understory. Beavers have moved into the area, and their dams have created impoundments that have helped in the development of wetland areas. However, beavers have removed willows and cottonwoods, which is slowing the overall growth and density of these desired species (Silva 1998). Upland vegetation of the site is dominated by big sagebrush. Other upland plants include rubber rabbitbrush, fourwing saltbush, shadscale, western wheatgrass, alkali sacaton, bottlebrush squirreltail, galleta grass, blue grama, globe mallow, Russian thistle, locoweed, and buckwheat. Raptors use the cottonwoods along Rito Leche to perch in while hunting (BLM 1991c).

The Rito Leche riparian area is designated as potential long-term southwestern willow flycatcher habitat (Silva 1998). In 1998, the Rito Leche riparian area was found to be in PFC for its entire length (Miller 1999).

1.2.1.3 Señorito Canyon

The Señorito Canyon riparian area (Figure 1.7) is located along Señorito Creek at T20N R1W, Sections 20, 29, 30, and 31, in Sandoval County. The confluence of the Rio Puerco and Señorito Creek is about 5 miles south of Cuba, New Mexico. The headwaters of Señorito Creek are 11 miles upstream in the Santa Fe National Forest. The BLM manages approximately 3 miles of the downstream segment of Señorito Creek. The width of the riparian area within the BLM portion of Señorito Canyon ranges from 119 feet in the upper portions to 171 feet farther downstream. The Señorito Canyon riparian area extends about 9,800 feet along Señorito Creek and occupies about 35 acres (BLM 1990b, 1991d; Miller 1999). Señorito Creek is generally a perennially flowing tributary of the Rio Puerco through the BLM-administered lands. At times, however, the water regime within the area may be considered semiperennial (Miller 1999).

The Señorito Canyon riparian area has been affected by upstream mining wastes (a mine tailings dam broke in 1973), dumping of garbage from old Highway 44, erosion,

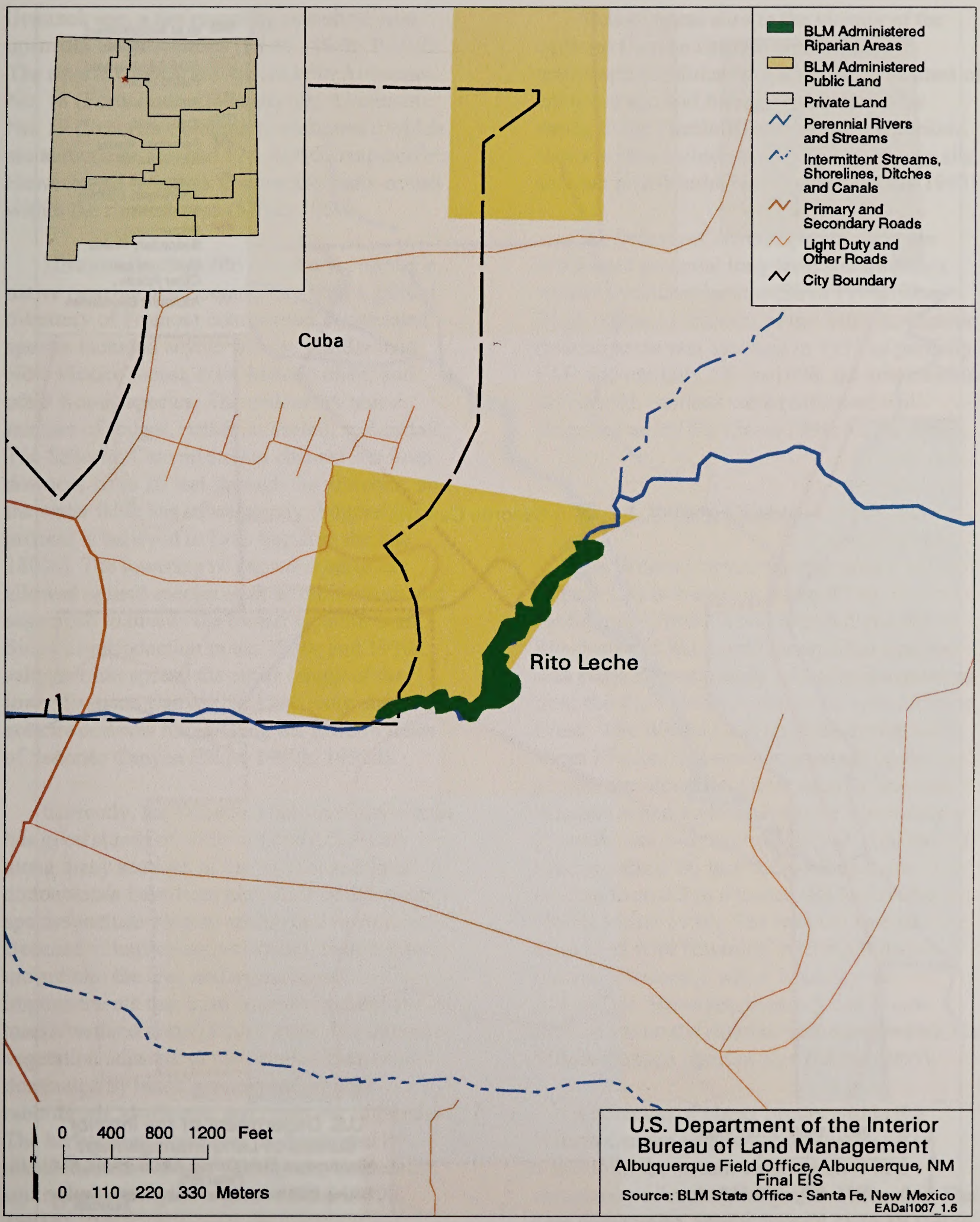

FIGURE 1.6 Rito Leche Riparian Area

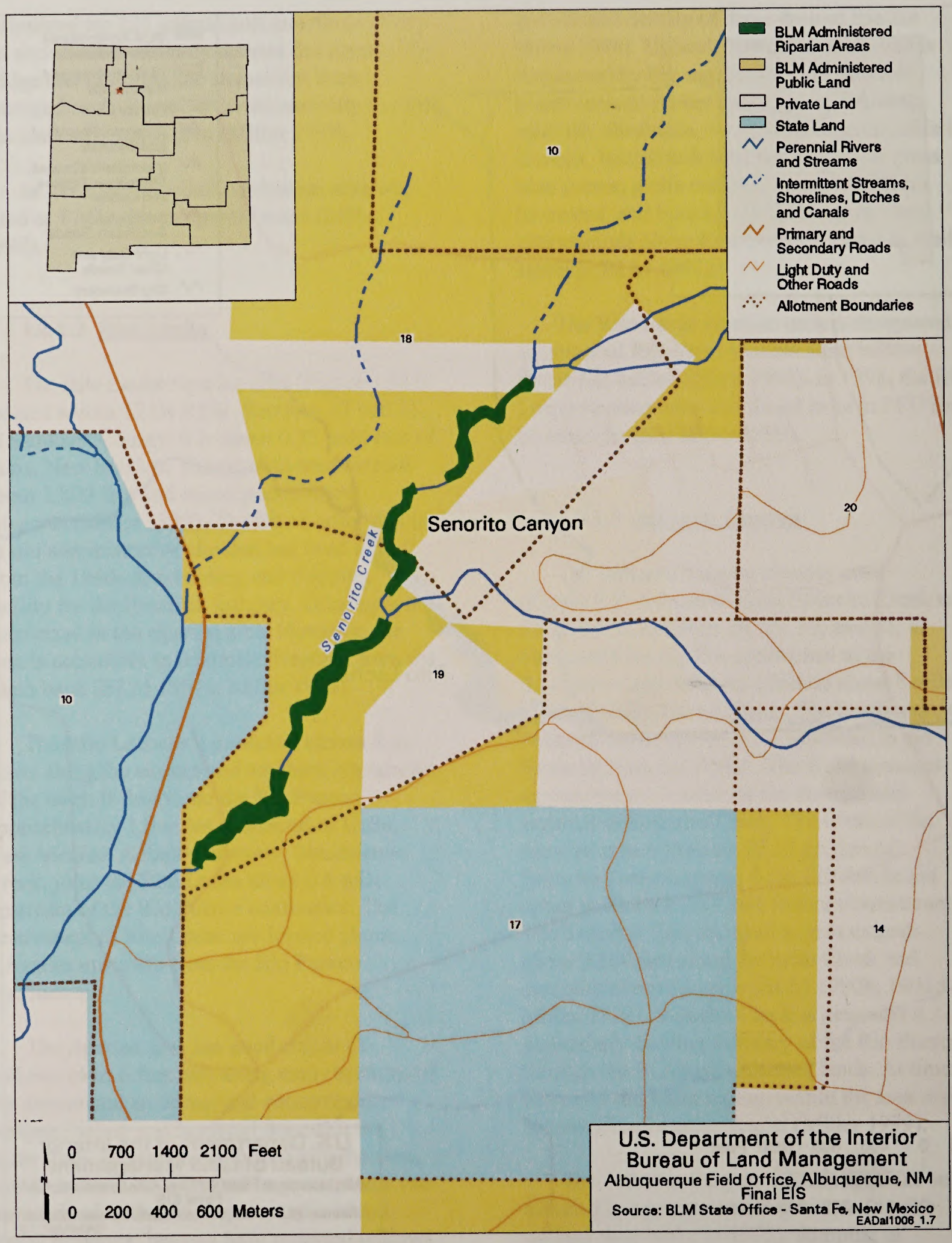

FIGURE 1.7 Señorito Canyon Riparian Area

livestock use, a tire recycling operation, and upstream irrigation uses (BLM 1990b, 1991d). The riparian area is associated with Allotment No. 18 (Forty Four allotment) and Allotment No. 19 (Señorita Community allotment), which are authorized 312 and 124 AUMs, respectively. However, no livestock grazing currently occurs within the riparian area (Miller 1999).

Historically, Señorito Canyon supported a native riparian plant community with a gallery overstory of Fremont cottonwood. Associated species included coyote willow, fendler rose, New Mexico locust, New Mexico olive, and other woody species. The understory was a mixture of sedges, rushes, horsetail, and cattail. The Señorito Canyon stream channel has been downcut 10 to 20 feet through the alluvium, and the water table has subsequently dropped (this process is believed to have begun in the late 1800s). The lowering of the water table has allowed upland species such as rabbitbrush and sagebrush to invade the former riparian zone. Since its introduction in the 1920s and 1930s, saltcedar has spread the entire length of the lower Señorito Canyon. In 1990, only one cottonwood was found along the lower 6 miles of Señorito Canyon (BLM 1990b, 1991d).

Currently, the Señorito Canyon riparian area has good stands of willows (4 to 6 feet tall) along many sections of the stream, and small cottonwoods have been planted. Aquatic plant species include sedges, cattail, and rushes. Because of improving conditions, beaver have moved into the area and have created impoundments that have helped to establish marsh/wetland areas (Silva 1998). The upland vegetation adjacent to the riparian zone is dominated by black greasewood, rubber rabbitbrush, shadscale, and basin big sagebrush. The herbaceous understory is dominated by alkali sacaton, western wheatgrass, bottlebrush squirreltail, and galleta grass (BLM 1990b, 1991d).

Archeological sites in the vicinity of the Señorito Canyon riparian area include prehistoric localities with small lithic scatters of unknown age and Anasazi habitation sites dating to the Pueblo III and Pueblo IV periods. Historic sites include a 17th century Navajo site and two post-World War II mines (Biella 1993).

The Señorito Canyon riparian areas are considered potential long-term southwestern willow flycatcher habitat (Silva 1998). The BLM-managed segment of the Señorito Canyon riparian areas was assessed in 1993 as partially FAR and partially NF. In 1998, the areas within the riparian pastures were reassessed and classified as in PFC (Silva 1998; Miller 1999).

1.2.1.4 Wilson Canyon

The Wilson Canyon riparian area (Figure 1.8) is located at T19N R1W, Sections 6, 7, and 18, and occurs along the Rio Puerco in Sandoval County. This riparian area starts approximately 1.6 miles downstream from the Rio Puerco's confluence with Señorito Creek. The Wilson Canyon riparian area totals about 77 acres and extends approximately 12,000 feet along the Rio Puerco. Within the Wilson Canyon riparian area, the Rio Puerco generally has a semiperennial flow. The stream averages about 80 feet wide, with a depth ranging from 0.5 to 4 inches (BLM 1992b, 1997c; Miller 1999). The riparian area is associated with Allotment No. 61 (Wilson Canyon allotment), which is authorized 240 AUMs. However, livestock use is now excluded from the riparian exclosures within the Wilson Canyon riparian area (Miller 1999).

A zonation of plants occurs within the Wilson Canyon riparian area. The first 4 to 6 feet from the stream bank consists of a community of rushes, sedges, and horsetail. The next community, approximately 15 to 30 feet in

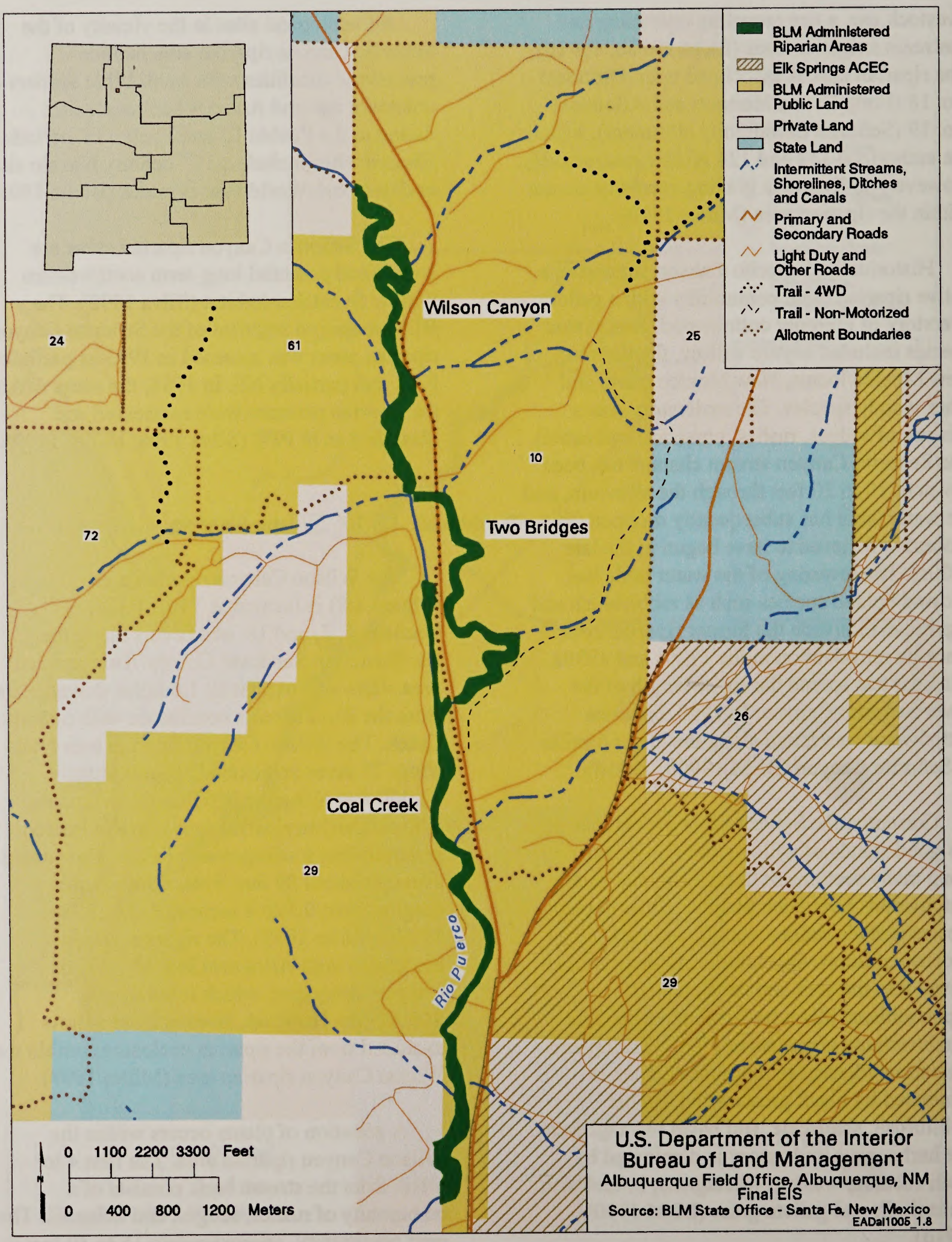

FIGURE 1.8 Wilson Canyon, Two Bridges, and Coal Creek Riparian Areas

from the bank, consists of willow, rye, redtop, and fescue. The upland community is dominated by saltcedar, rubber rabbitbrush, white sweet clover, western wheat grass, and salt grass. Scattered along the banks are a few Fremont cottonwoods, peachleaf willow, and Russian olives. Aquatic plants are scarce because of unstable stream banks and high frequency of floods. The adjacent upland vegetation is dominated by either black greasewood or alkali sacaton. Where the former dominates, the sparse understory is limited to some bottlebrush squirreltail, western wheat grass, and shadscale (BLM 1992b, 1997c; Silva 1998).

Migrating southwestern willow flycatchers have been observed within the Wilson Canyon riparian area. To date, no nesting by southwestern willow flycatchers has been observed in the riparian area. The Wilson Canyon riparian area was designated as potential long-term southwestern willow flycatcher habitat (Silva 1998). The riparian habitat was classified in 1993 as NF and FAR. The area was reassessed in 1998 and classified as FAR with an upward trend (Silva 1998; Miller 1999).

1.2.1.5 Two Bridges

The Two Bridges riparian area (Figure 1.8) is located at T19N R1W, Sections 8, 17, 18, and 20, and occurs near the Rio Puerco, downstream from the Wilson Canyon, east of State Highway 44, and north of Arroyo de los Pinos in Sandoval County. The riparian area represents the original stream channel that existed before the channelization effort completed by the New Mexico Department of Highways in 1965. This channel is currently without water from the Rio Puerco. The straight-line channel associated with State Highway 44 has a river drop of about 14 feet in grade below the channel. This drop has increased water velocity, and the rate of erosion (bank cutting) has caused higher sediment loads in the Rio Puerco (BLM 1992b). The Rio Puerco in the vicinity of the Two Bridges riparian area is semiperennial. The riparian area extends about 10,000 feet and encompasses about 30 acres. The riparian area is associated with Allotment No. 10 (Brandy allotment), which is authorized 3,073 AUMs. Livestock currently graze within the riparian area (Miller 1999).

The Two Bridges riparian area does contain some remnant cottonwoods, willows, and herbaceous riparian vegetation, apparently supported by water from subsurface flows from the Rio Puerco. Full flow from the Rio Puerco will be rerouted through the riparian area in about 3 years. This action would create active riparian conditions, resulting in the need for future management attention (Miller 1999).

This is a newly specified riparian area, and its functional rating has not yet been determined (Miller 1999).

1.2.1.6 Coal Creek

The Coal Creek riparian area (Figure 1.8) is located at T19N R1W, Sections 19, 20, 29, 30, and 32, along the Rio Puerco, downstream from the Wilson Canyon and Two Bridges riparian areas in Sandoval County. The riparian area is approximately 18,500 feet long and comprises about 100 acres. Within the riparian area, Rio Puerco generally has a semiperennial flow. The stream averages about 80 feet wide and 0.5 to 4 inches deep (BLM 1992b; Miller 1999). The Coal Creek riparian area is not associated with any grazing allotment. Livestock use is excluded from the riparian exclosure within the Coal Creek riparian area (Miller 1999).

A pattern of vegetation zones occurs in the Coal Creek riparian area. The vegetation community in the first 4 to 6 feet from the stream bank consists of rushes, sedges, and

horsetail. The next community, approximately 15 to 30 feet in from the bank consists of willow, rye, redtop, and fescue. The upland community is dominated by saltcedar, rubber rabbitbrush, white sweet clover, western wheat grass, and salt grass. Scattered along the banks are a few Fremont cottonwoods, peachleaf willow, and Russian olives. Aquatic plants are scarce because of unstable stream banks and the high frequency of floods. The adjacent upland vegetation is dominated by either black greasewood or alkali sacaton. Where the former dominates, the understory is sparse, with some bottlebrush squirreltail, western wheat grass, and shadscale (BLM 1992b; Silva 1998).

The Coal Creek riparian area is designated as potential long-term southwestern willow flycatcher habitat (Silva 1998). In 1993 the riparian area was classified as NF and FAR. In 1998, it was reassessed as FAR with an upward trend (Silva 1998; Miller 1999).

1.2.1.7 Cerros Colorados

The Cerros Colorados riparian area (Figure 1.9) extends about 12,500 feet from its boundary with the Coal Creek grazing allotment at its upstream limit (T18N R1W Section 6) to the point where the San Luis Road crosses the Rio Puerco at its downstream boundary (T17N R2W Section 14) and encompasses about 43 acres (BLM 1991b, 1992a; Miller 1999). Four segments of BLM lands are intermingled with private and state lands within this reach of the Rio Puerco. This section of the Rio Puerco generally has semiperennial flow. Most of the flow within the area comes either as runoff from snowmelt in the early spring or as flash floods during the late summer monsoon season. Average depth of flow varies from 0.1 to 1.0 foot, with estimated summer peak high water marks at 6 feet.

The Cerros Colorados riparian area is associated with Allotment No. 32 (Cerros Colorados allotment), which is authorized 1,284 AUMs. Some cattle graze the Cerros Colorados riparian area year long, but the primary period of use is during the dormant season (Miller 1999).

Native cottonwoods and willows have been largely replaced by Russian olive and saltcedar within the Cerros Colorados riparian area. The meander cut banks of the Rio Puerco are barren and have little or no vegetative growth. Upland plants such as rubber rabbitbrush have also invaded the riparian area. High flows during spring snowmelt and summer floods have washed away stream bank vegetation in many segments of the Rio Puerco. Bank sloughing occurs along almost the entire length of the Cerros Colorados riparian area and causes large quantities of sediment to enter the Rio Puerco. Side gullies and tributaries transport additional sediments to the Rio Puerco (BLM 1991b, 1992a).

Where the stream bank is relatively stable, the riparian area vegetation for the first 2 feet back from the channel is a sedge/horsetail community. Farther back, another 8 to 10 feet, is a coyote willow community. Farther back still is a band of Russian olive. Beyond this band, there is a band of young cottonwoods, and in the driest areas farthest from the channel is a band of saltcedar. Some mature cottonwoods are found on the high bank adjacent to the upland vegetation. These trees have been present since before the channel was incised between 1885 and 1890 (Silva 1998).

In areas with unstable banks or where meanders exist with a high degree of bank sloughing, riparian vegetation is either nonexistent or is mixed, with some young cottonwoods occurring close to the bank with

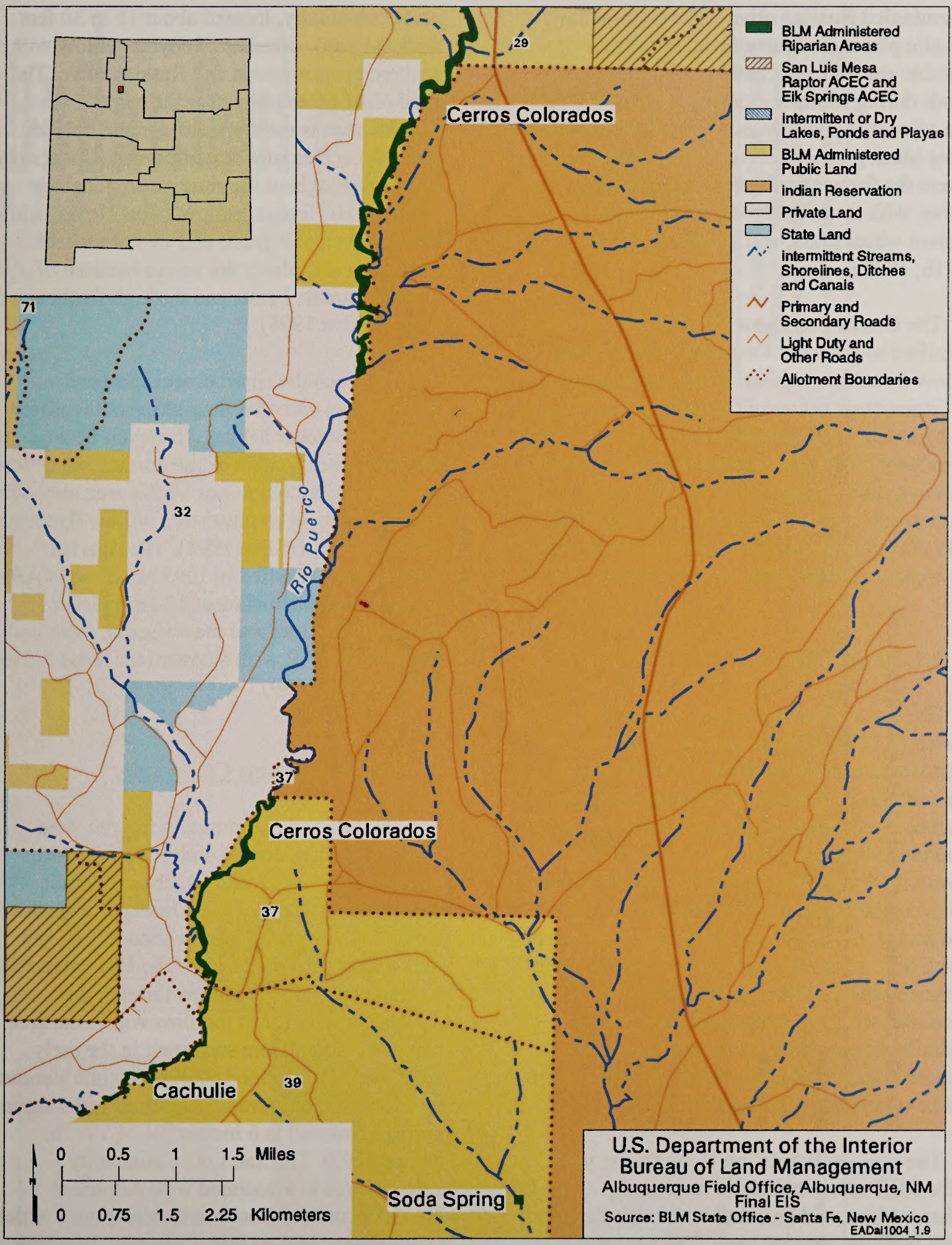

FIGURE 1.9 Cerros Colorados and Cachulie Riparian Areas

intermingled Russian olive and coyote willow. Aquatic plants are scarce because of the unstable stream banks and high frequency of floods during summer monsoons (Silva 1998). The adjacent upland vegetation is dominated by either black greasewood or alkali sacaton. Where the former dominates, understory is sparse, with some bottlebrush squirreltail, western wheat grass, and shadscale (BLM 1991b, 1992a).

The Cerros Colorados riparian area has been identified as potential long-term southwestern willow flycatcher habitat. However, because of the intermittent nature of the normal water flow, the hydrologic component of this area may never adequately meet southwestern willow flycatcher nesting criteria (Silva 1998). In 1993, the riparian habitat was classified as NF and FAR. In 1998, the area was reevaluated as FAR, trend not apparent (Silva 1998; Miller 1999).

1.2.1.8 Cachulie

The Cachulie riparian area (Figure 1.9), located at T17N R2W, Sections 14, 22, and 23, in Sandoval County, is about 11,500 feet long and contains 26 acres of riparian habitat. The riparian area is located along a section of the Rio Puerco that generally has semiperennial flow, with dry periods during the late spring and summer months. Most of the flow within the area comes as runoff from snowmelt in the early spring or as flash floods during the late summer monsoon season. The riparian area is not associated with a grazing allotment. The Cachulie riparian area is currently accessible to trespass livestock (Miller 1999), but this misuse will be corrected in the near future.

The riparian vegetation along this segment of the Rio Puerco includes a community of rushes, sedges, and horsetail within the first 4 to 6 feet from the channel bank. The next riparian plant community, located about 15 to 30 feet from the bank, consists of coyote willow with scattered cottonwoods and Russian olive. The final plant community near the edge of the riparian area is mostly saltcedar and upland species, such as rubber rabbitbrush. Understory species throughout the riparian area include brome grass, fescue, yellow sweet clover, white sweet clover, salt grass, and western wheat grass. Aquatic plants are scarce because of unstable stream banks and the high frequency of floods (Silva 1998).

The Cachulie riparian area has been identified as potential long-term southwestern willow flycatcher habitat. However, because of the intermittent nature of the normal water flow, the hydrologic component of this area may never adequately meet southwestern willow flycatcher nesting criteria (Silva 1998). The riparian habitat was classified in 1993 as NF and FAR (prior to the establishment of the riparian pasture). The area was reassessed in 1998 and found to be FAR with a downward trend (Silva 1998; Miller 1999).

1.2.1.9 San Luis Community

The San Luis Community riparian area (Figure 1.10) is located within T17N R2W, Sections 21, 22, 23, and 24, about 0.5 mile south of the village of San Luis in Sandoval County. The riparian area is about 6,000 feet long and occupies 22 acres. The Rio Puerco has a semiperennial stream flow through this riparian area. Most of the flow within the area comes as runoff from snowmelt in the early spring or as flash floods during the late summer monsoon season. Average depth of water during spring snowmelt is 6 inches (BLM 1993b; Miller 1999). The San Luis Community riparian area is associated with Allotment No. 38 (San Luis Community allotment), which is authorized 904 AUMs. Currently, livestock

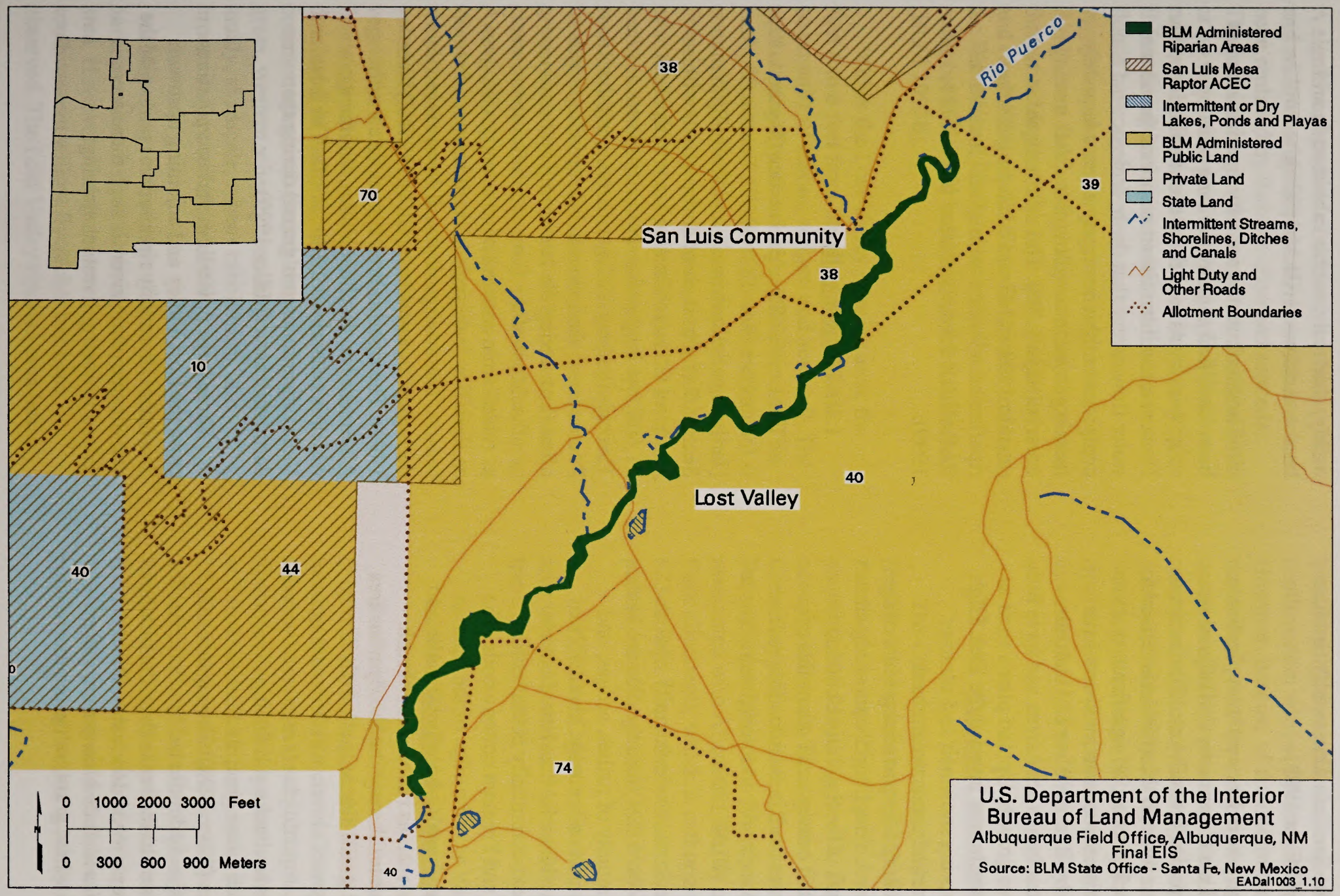

FIGURE 1.10 San Luis Community and Lost Valley Riparian Areas

graze within the San Luis Community riparian area year long (Miller 1999).

Three large power lines and two pipelines cross the San Luis Community and adjoining Lost Valley riparian areas. Most of the eastern side of the river through these areas is fenced to control livestock grazing. A significant portion of the native cottonwoods and willows have been replaced by Russian olive and saltcedar. The meander cut banks are barren and have little or no vegetative growth. Upland plants such as rubber rabbitbrush have invaded the area. High flows during spring snowmelt and summer floods have washed away stream bank vegetation in many overgrazed segments of the Rio Puerco. Bank sloughing occurs along almost the entire length of the San Luis Community riparian area and causes large quantities of sediment to enter the Rio Puerco. Side gullies and tributaries transport additional sediments to the Rio Puerco (BLM 1993b).

Within the San Luis Community riparian area, the first 4 to 6 feet from the channel bank contain a community of rushes, sedges, and horsetail. The next community, about 15 to 30 feet in from the bank, consists of coyote willow. The next community is scattered Russian olive and Fremont cottonwoods. The final community near the edge of the riparian area at the steep banks is mostly saltcedar and upland species such as rubber rabbitbrush. Understory species throughout the riparian area include brome grass, fescue, yellow sweet clover, white sweet clover, western wheat grass, and salt grass. Aquatic plants are scarce because of unstable stream banks and the high frequency of floods, which cause great fluctuations in runoff volumes (Silva 1998). The adjacent upland vegetation is dominated by alkali sacaton and fourwing salt bush, but in the most alkaline areas black greasewood dominates. Other common species include blue grama, galleta grass, western wheat grass, saltgrass, mat muhly, shadscale, rubber rabbitbrush, and broom snakeweed (BLM 1993b).

The San Luis Community riparian area has been identified as potential long-term southwestern willow flycatcher habitat. However, the intermittent nature of the normal water flow means that the hydrologic component of this area may never adequately meet southwestern willow flycatcher nesting criteria (Silva 1998). The riparian habitat was rated in 1993 as NF and FAR. In 1998 the riparian area was reassessed and found to be FAR with a downward trend (Silva 1998; Miller 1999).

1.2.1.10 Lost Valley

The Lost Valley riparian area (Figure 1.10) is located between T17N R2W, Section 28 (farthest point upstream), and T16N R2W, Section 7 (farthest point downstream) within Sandoval County. The riparian area is about 21,600 feet long and occupies 103 acres. Through the Lost Valley riparian area, the Rio Puerco has a semiperennial flow, with periods of no flow during the late spring and summer months. Most of the flow within the area comes as runoff from snowmelt in the early spring or as flash floods during the late summer monsoon season. The average depth of flow is 6 inches during spring snowmelt (BLM 1993b; Miller 1999). The riparian area is associated with Allotment No. 40 (Lost Valley allotment), which is authorized 2,366 AUMs. The Lost Valley riparian area is grazed during the dormant season (Miller 1999).

Three large powerlines and two pipelines cross the Lost Valley and adjoining upstream San Luis Community riparian areas. Most of the eastern side of the river through these areas is fenced to control livestock grazing.

A significant portion of the native cottonwoods and willows originally occurring in the area has been replaced by Russian olive and saltcedar. The meander cut banks are barren and have little or no vegetative growth. Upland plants such as rubber rabbitbrush have invaded the area. High flows during spring snowmelt and summer floods have washed away stream bank vegetation in many overgrazed segments of the Rio Puerco. Bank sloughing occurs along almost the entire length of the Lost Valley riparian area and causes large quantities of sediment to enter the Rio Puerco. Side gullies and tributaries transport additional sediments to the Rio Puerco (BLM 1993b).

Within the Lost Valley riparian area, the first 4 to 6 feet from the channel bank is a community of rushes, sedges, and horsetail. The next community, about 15 to 30 feet in from the bank, consists of coyote willow. The next community is scattered Russian olive and Fremont cottonwoods. The final community near the edge of the riparian area at the steep banks is mostly saltcedar and upland species such as rubber rabbitbrush. Understory species throughout the riparian area include brome grass, fescue, yellow sweet clover, white sweet clover, western wheat grass, and salt grass. Aquatic plants are scarce because of unstable stream banks and the high frequency of floods, which causes great fluctuations in runoff volumes (Silva 1998). The adjacent upland vegetation is dominated by alkali sacaton and fourwing saltbush; although black greasewood dominates in the most alkaline areas. Other common species include blue grama, galleta grass, western wheat grass, saltgrass, mat muhly, shadscale, rubber rabbitbrush, and broom snakeweed (BLM 1993b).

Migrating southwestern willow flyctchers have been seen within the Lost Valley riparian area. However, to date, no nesting by the southwestern willow flycatcher has been observed. The Lost Valley riparian area has been identified as potential long-term southwestern willow flycatcher habitat. However, because of the intermittent nature of the normal water flow, the hydrologic component of this area may never adequately meet southwestern willow flycatcher nesting criteria (Silva 1998). In 1993, the riparian habitat was rated as NF and FAR. In 1998, the riparian areas were reassessed as FAR with an upward trend (Silva 1998; Miller 1999).

1.2.1.11 Cabezon Community

The Cabezon Community riparian area (Figure 1.11) is located at T16N R3W within Sandoval County. The riparian area extends about 10,200 feet along the Rio Puerco and occupies 45 acres. Through the Cabezon Community riparian area, the flow of the Rio Puerco is semiphemeral. The riparian area is associated with Allotment No. 44 (Cabezon Peak allotment), which is authorized 623 AUMs. The Cabezon Community riparian area is currently grazed (Miller 1999).

In 1998, the Cabezon Community riparian area was evaluated as FAR with an upward trend (Miller 1999).

1.2.1.12 Rio Salado Community

The Rio Salado Community riparian area (Figure 1.12) is located at T15N R1E, Section 12, within Sandoval County. The riparian area starts about 0.25 mile below the State Highway 44 bridge across the Rio Salado at San Ysidro. The riparian area is about 18,000 feet long and encompasses about 143 acres. A portion of this acreage includes the Rio Salado Community wetland area (the San Ysidro Marsh Area) (BLM 1992c,d; Miller 1999), which is considered to be a distinct riparian area (see Section 1.2.2.2).

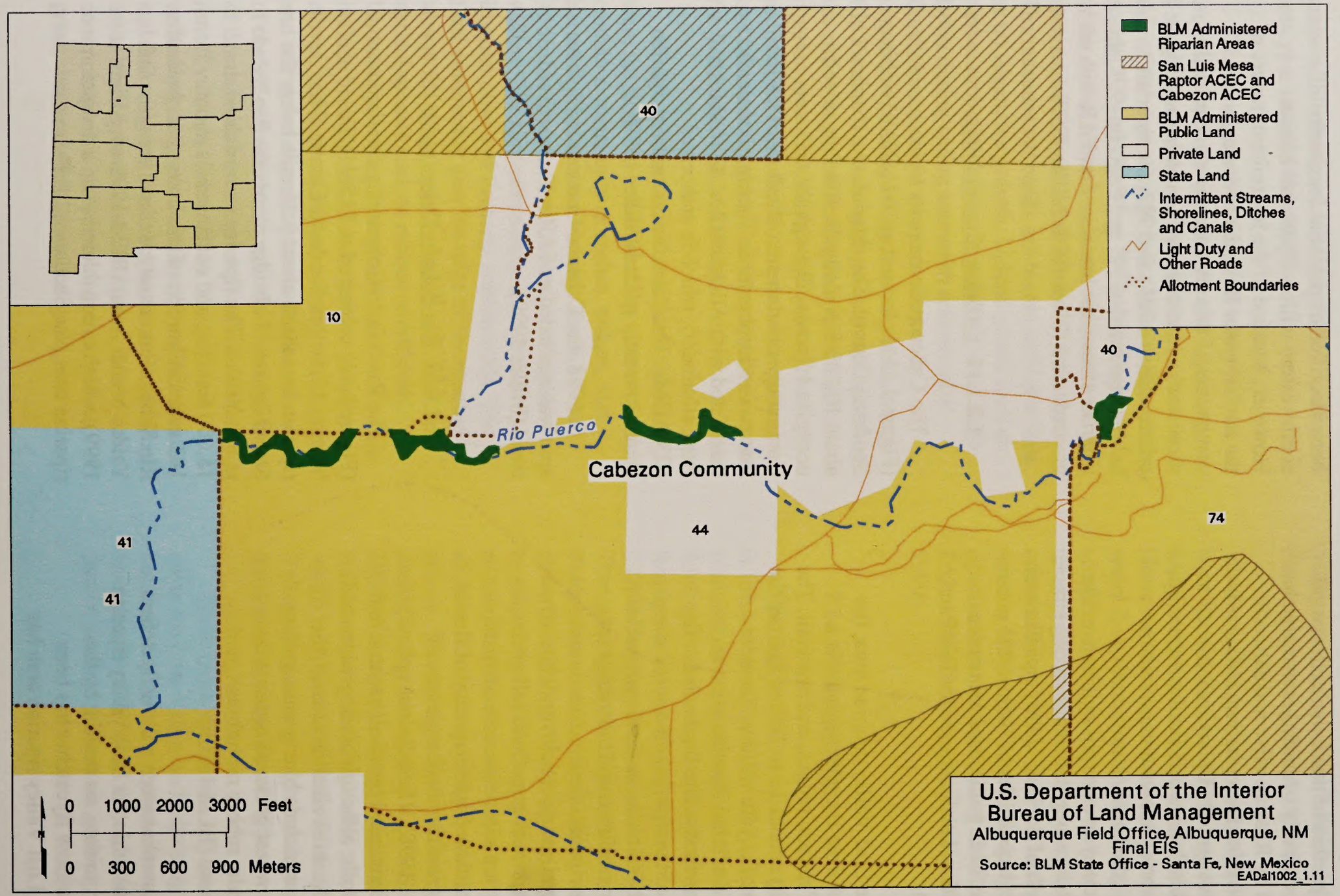

FIGURE 1.11 Cabezon Community Riparian Area

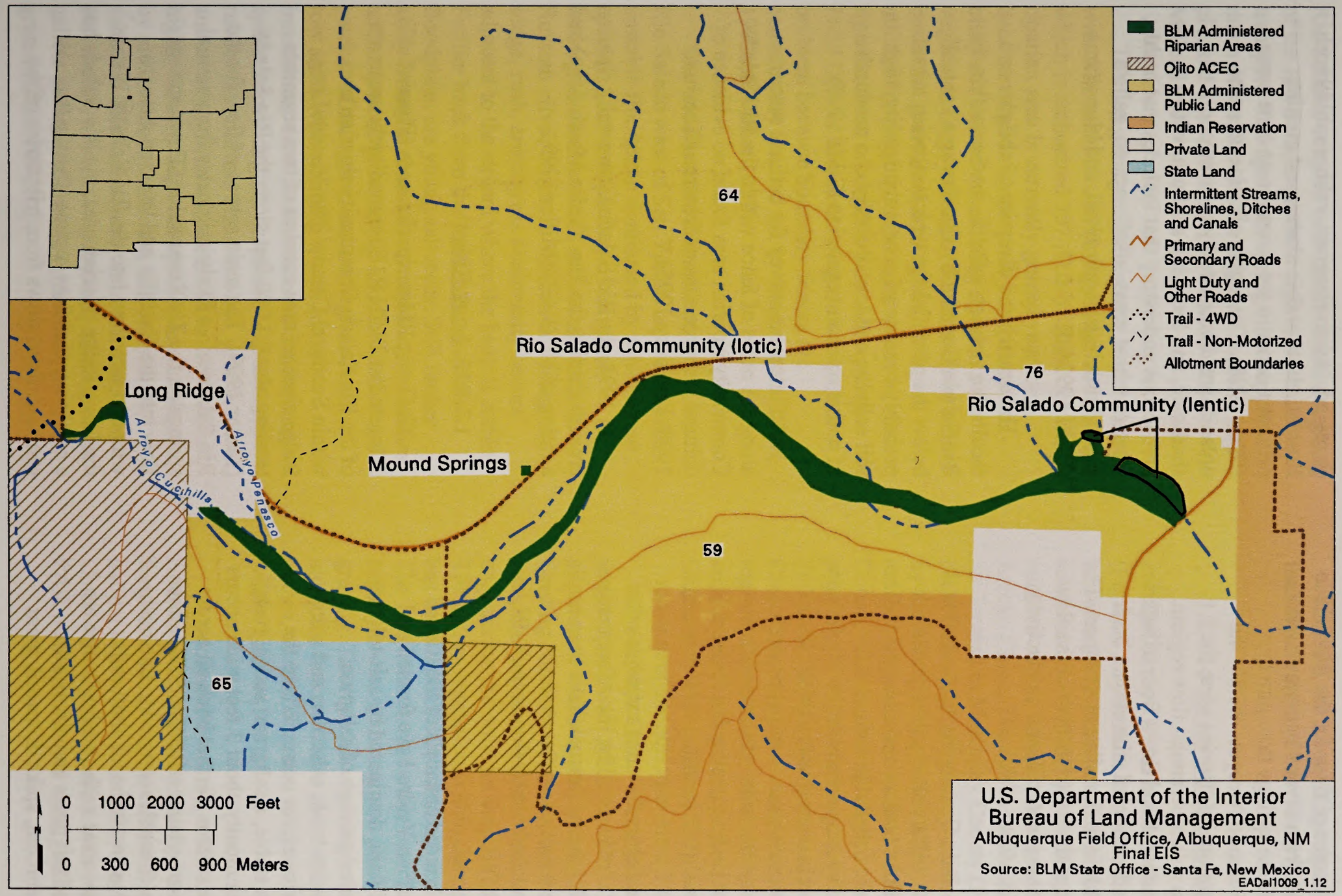

FIGURE 1.12 Rio Salado Community and Long Ridge Riparian Areas

The main source of flow for the Rio Salado probably comes from several springs on the Zia Reservation. These springs flow into the Cuchilla and Penasco Arroyos. Within the Rio Salado Community riparian area, the Rio Salado has a semiperennial flow regime. During the summer, flood flows from tributaries of the Rio Salado, coupled with stream bank sloughing, result in high sediment transport. The upstream springs that supply much of the flow have a high salt content, pH, and conductivity (BLM 1992c,d; Miller 1999).

The Rio Salado Community riparian area is associated with Allotment No. 64 (Rio Salado allotment), which is authorized 216 AUMs. The riparian area is currently grazed year long, except for the fenced portions of the Rio Salado Community wetland area where livestock are excluded. However, because of poor water quality and nonpalatability of some of the existing vegetation (e.g., saltcedar, Russian olive, iodine bush, salt grass, and arrowgrass), the Rio Salado Community riparian area is not utilized for grazing to the same extent as other riparian areas administered by the Albuquerque Field Office. Trespass livestock have been a problem because boundary fences are occasionally washed out by floodwaters (BLM 1992c,d; Miller 1999).

The wide braided channels of the Rio Salado west of San Ysidro have formed an unstable floodplain, dominated by salt-tolerant species. Scattered patches of saltgrass, arrowgrass, iodine bush, saltcedar, and a few scattered Russian olives occur. Where the stream bank is stable, a saltgrass, sedge, rush, arrowgrass community about 3 feet wide occurs adjacent to the stream. Farther back all across the floodplain are young saltcedar. Still farther away from the channel, scattered iodine bushes and seepweed grow on the alkaline soils. Growing in low areas with standing water are pure patches of salt grass and arrowgrass. Scattered dunebroom, spike dropseed, giant dropseed, Indian ricegrass, rubber rabbitbrush, Russian olive, prairie clover, and evening primrose occur in the intermittent dune areas (Silva 1998). The highly alkaline adjacent uplands are dominated by greasewood, shadscale, and fourwing saltbush, with a herbaceous understory that includes mat muhly, western wheat grass, alkali sacaton, galleta grass, bottlebrush squirreltail, and blue grama (BLM 1992c,d).

The density and diversity of obligate and facultative riparian wildlife species within the Rio Salado Community riparian area are well below the potential for typical riparian areas, probably because of poor water quality, high soil salinity, and low diversity and productivity of native riparian vegetation (Silva 1998).

An intensive survey for cultural resources along 3.1 miles of fence within the Rio Salado Community riparian area found no evidence of cultural resource sites or features (Kneebone 1993; Lutonsky 1995).

In 1998, the Rio Salado Community riparian area (excluding the San Ysidro Marsh Area) had a rating of NF (FAP) (Miller 1999).

1.2.1.13 Long Ridge

The Long Ridge riparian area (Figure 1.12) is located at T15N R1E, immediately upstream of the Rio Salado Community riparian area within Sandoval County. The 36-acre Long Ridge riparian area consists of two segments totaling about 7,000 feet along the Rio Salado (Miller 1999). The main source of flow for the Rio Salado most likely originates from several springs on the Zia Reservation. These springs flow into the Cuchilla and Penasco Arroyos, which in turn flow into the Rio Salado. Within the Long Ridge riparian area, the Rio Salado has a semiperennial flow regime. During the summer, flood flows from tributaries of the

Rio Salado, coupled with stream bank sloughing of the Rio Salado, produce high sediment transport. The upstream springs that supply much of the flow have a high salt content, high pH, and high conductivity (BLM 1992c,d; Miller 1999).

The Long Ridge riparian area is associated with Allotment No. 65 (Long Ridge allotment), which is authorized 307 AUMs. Although the riparian area is currently grazed year long, because of poor water quality and nonpalatability of some of the existing riparian zone vegetation (e.g., saltcedar, Russian olive, iodine bush, salt grass, and arrowgrass), it is not utilized for grazing to the same extent as other riparian areas managed by the Albuquerque Field Office. Livestock trespass has been a problem because boundary fences are occasionally washed out by floodwaters (BLM 1992c,d; Miller 1999).

The wide braided channels of the Rio Salado west of San Ysidro have formed an unstable floodplain dominated by salt-tolerant species. Scattered patches of saltgrass, arrowgrass, iodine bush, saltcedar, and a few Russian olives occur. A 3-foot-wide saltgrass, sedge, rush, arrowgrass community occurs adjacent to the stream where the bank is stable. Farther back from the bank, all across the floodplain, are young saltcedar. Still farther away from the channel, scattered iodine bushes and seepweed grow on the alkaline soils. Pure patches of salt grass and arrowgrass occur in low areas with standing water. In the intermittent dune areas, scattered dunebroom, spike dropseed, giant dropseed, Indian ricegrass, rubber rabbitbrush, Russian olive, prairie clover, and evening primrose occur (Silva 1998). The highly alkaline adjacent uplands are dominated by greasewood, shadscale, and fourwing saltbush. The herbaceous understory includes mat muhly, western wheat grass, alkali sacaton, galleta grass, bottlebrush squirreltail, and blue grama (BLM 1992c,d).

In 1998, the Long Ridge riparian area had a functional rating of NF (FAP) (Miller 1999).

1.2.1.14 Arroyo Chico – Azabache

The Arroyo Chico – Azabache riparian area (Figure 1.13) extends from near the boundary between T17N R5W and T16N R5W southeasterly to T16N R3W. The riparian area consists of five interrupted segments along Arroyo Chico. The two most westerly segments are located in McKinley County (Farmington Field Office), although they are being managed by the Albuquerque Field Office. The three easterly segments are located within Sandoval County. The combined length of the riparian segments is 43,200 feet, and they encompass 380 acres. Within the riparian area, the Arroyo Chico generally has a semiperennial flow regime. However, a portion of the west-central section receives a perennial flow from Charlotte's Well (Miller 1999).

The Arroyo Chico – Azabache riparian area is associated with Allotment No. 42 (Azabache allotment), which is authorized 1,909 AUMs. Grazing currently occurs within the riparian area; the western portion is fenced and is used only during the dormant season (Miller 1999). The native vegetation within the riparian area has been replaced by saltcedar and rabbitbrush. The few willows that are present have been heavily browsed during past year-long livestock grazing. The riparian vegetation that occurs along the Arroyo Chico channel includes sedges, rushes, rabbitfoot grass, saltgrass, and coyote willow (Silva 1998).

A portion of the Arroyo Chico – Azabache riparian area has been identified as potential long-term southwestern willow flycatcher habitat (Silva 1998). In 1998, the Arroyo Chico – Azabache riparian area was rated as FAR with a downward trend (Miller 1999).

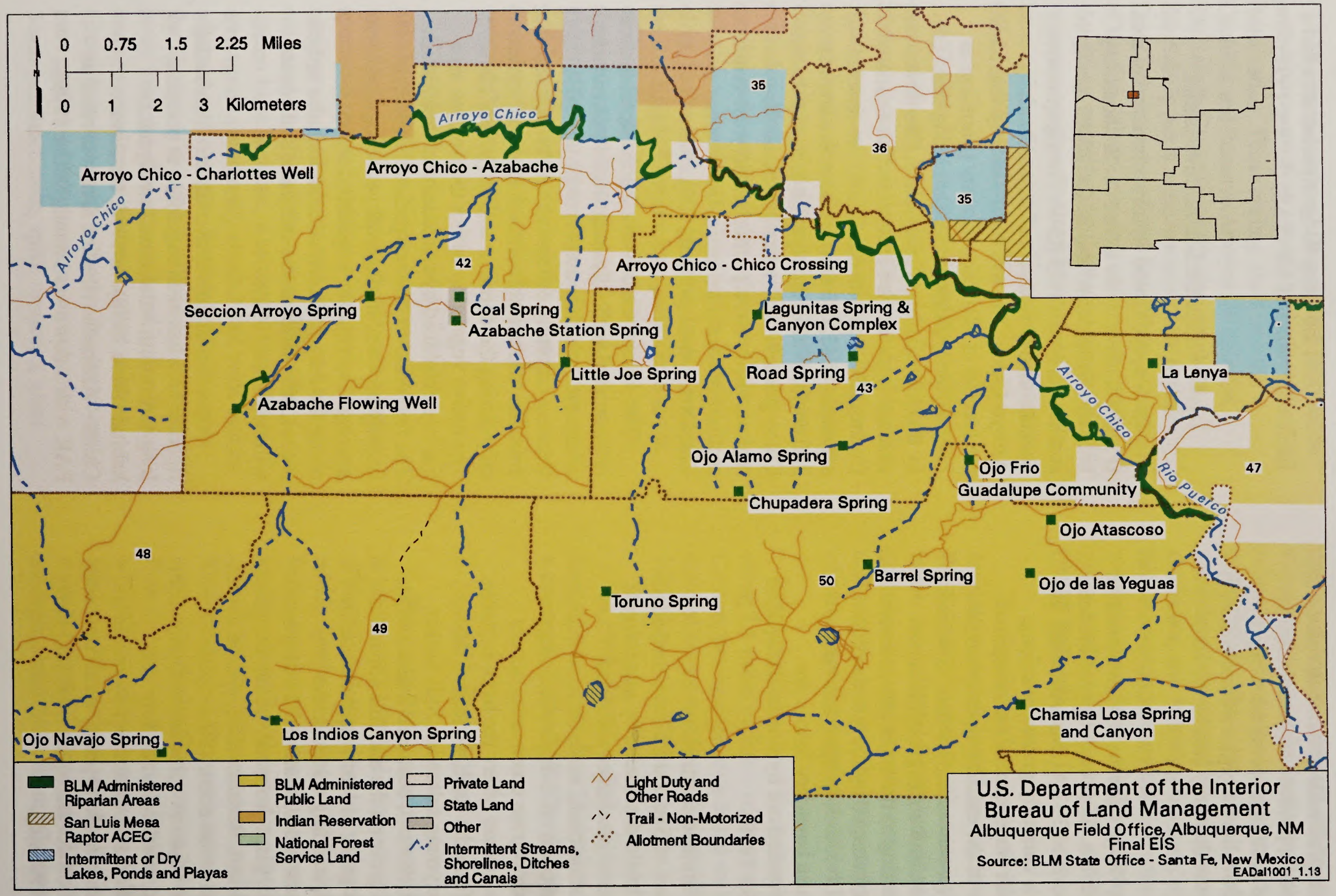

FIGURE 1.13 Arroyo Chico and Guadalupe Riparian Areas, Azabache Flowing Well Wetland Area, and Mesa Chivato Springs

1.2.1.15 Arroyo Chico – Charlotte's Well

The Arroyo Chico – Charlotte's Well riparian area (Figure 1.13) is located at T16N R5W, Section 6, in McKinley County. This area is located within the Farmington Field Office but is being managed by the Albuquerque Field Office. The riparian area was created and is being maintained by water from Charlotte's Well, a flowing artesian well. The Arroyo Chico – Charlotte's Well riparian area originates at the well and ends downstream where the boundary fence between the Seccion Arroyo and Azabache allotments crosses Chico Arroyo. The Arroyo Chico – Charlotte's Well riparian area is approximately 3,300 feet long and encompasses 15 acres. This portion of Arroyo Chico has a perennial flow regime (BLM 1993a, 1994b; Miller 1999).

The Arroyo Chico – Charlotte's Well riparian area is in the Arroyo Chico drainage basin. Extensive sediment loading occurs each year from upstream portions of the watershed. Side gullies and tributaries transport sediment into the arroyo upstream from Charlotte's Well. These flows occur during short-duration, high-intensity storms in the summer storm season (BLM 1993a, 1994a). The riparian area is associated with Allotment No. 42 (Azabache allotment), which is authorized 1,909 AUMs. However, no livestock grazing occurs within the Arroyo Chico – Charlotte's Well riparian area (Miller 1999).

The riparian vegetation within the riparian area consists of sedges, rushes, rabbitfoot grass, salt grass, and coyote willow within and immediately adjacent to the channel. However, most of the native vegetation has been replaced, principally by saltcedar and rabbitbrush. There are a few coyote willows, but until the area was fenced, the willows were heavily browsed by livestock. The point bars and first and second terraces are dominated by saltcedar. No cottonwoods grow in the area, possibly because salinity is above their tolerance level. The area immediately adjacent to Charlotte's Well has a very dense stand of large saltcedar with very little native vegetation (Silva 1998).

The dense saltcedar provides wildlife cover, although it is not used by most birds for nesting. Native riparian woody species make up only a small portion of the riparian vegetative community. The adjacent upland plant community is characterized by alkali sacaton, western wheatgrass, bottlebrush squirreltail, Indian rice grass, galleta grass, blue grama, winter fat, and fourwing saltbush. Much of the area is dominated by broom snakeweed. Black greasewood and shadscale also occur (BLM 1993a, 1994a).

No significant cultural resources are documented within the Arroyo Chico - Charlotte's Well riparian area (BLM 1993a, 1994a).

This riparian area is designated as potential long-term southwestern willow flycatcher habitat (Silva 1998). In 1993, the riparian habitat was rated NF. The area was reevaluated in 1998 as FAR with an upward trend (Silva 1998; Miller 1999).

1.2.1.16 Arroyo Chico – Chico Crossing

The two segments of the Arroyo Chico – Chico Crossing riparian area (Figure 1.13) originate downstream from the Arroyo Chico – Azabache riparian area and are located at T16N R4W in Sandoval County. The Arroyo Chico – Chico Crossing riparian area is approximately 50,000 feet long and encompasses 260 acres of riparian habitat. Arroyo Chico has a semiephemeral flow regime through the riparian area. The riparian area is associated with Allotment No. 43 (Chico Crossing allotment), which is authorized 1,889 AUMs. The riparian area is currently grazed (Miller 1999).

In 1998, the Arroyo Chico – Chico Crossing riparian area was rated as NF (Miller 1999).

1.2.1.17 Guadalupe Community

The Guadalupe Community riparian area (Figure 1.13) extends from the southern part of T16N R3W through the northern portion of T15N R3W in the vicinity of the confluence of Arroyo Chico with the Rio Puerco in Sandoval County. The 77-acre riparian area extends about 10,500 feet along the Rio Puerco, which has an ephemeral flow through this reach. The riparian area is associated with Allotment No. 47 (Guadalupe allotment), which is authorized 580 AUMs. The Guadalupe Community riparian area is currently grazed (Miller 1999).

In 1998, the Guadalupe Community riparian area was rated as NF (FAP). Low water availability is a limiting factor at this reach of the Rio Puerco; thus, the riparian area is at its potential given the present water regime (Miller 1999).

1.2.1.18 Rinconada Canyon

The Rinconada Canyon riparian area (Figure 1.14) is located at T11N R8W, Sections 23 and 26, near the confluence with Guadalupe Creek (intersection of Rinconada and Guadalupe Canyons) in Cibola County. Rinconada Canyon drains the southern slope of Mt. Taylor in the San Mateo Mountains of the Cibola National Forest. The 15-acre riparian area extends about 3,000 feet along Rinconada Creek. This reach of the creek has a semiperennial flow regime and is fed by drainages of Canovitas and Bosque springs and by runoff from numerous other drainages. The riparian area is associated with Allotment No. 425 (T. Arvisu allotment), which is authorized 272 AUMs. The Rinconada Canyon riparian area is currently grazed (Miller 1999).

The U.S. Forest Service has identified the area upstream and adjacent to the Rinconada Canyon riparian area as a neotropical bird management area. However, this area has not yet received official designation (Miller 1999).

Rinconada Canyon has been heavily affected by human activities from prehistoric to recent times, as evidenced by the numerous archaeological sites there. These past activities have included prehistoric Native American timber harvest and agriculture, Hispanic livestock grazing, and multiple use by Anglos (primarily timber harvest and livestock grazing). However, no major timber harvesting or grazing has occurred since the 1930s or 1940s. Present human impacts are primarily the result of water diversion from the springs for livestock use and some limited use by hikers and campground facilities (Blair 1993).

The habitats present at the lower elevations of Rinconada Canyon include pinyon-juniper woodlands. The mesa between Rinconada and Guadalupe Creeks contains an isolated grassland dominated by short grasses (*Grama* spp. and *Buchloe dactyloides*) and several genera of cacti. The dominant riparian plant species is thinleaf alder. Other species include Gambel oak, boxelder, cottonwood, wild rose, and Fendler barberry (Blair 1993).

A total of 40 bird species (31 were breeding birds) have been observed along the lower 3.5 miles of the Rinconada Canyon during the nesting season. The more commonly observed species included violet-green swallow, solitary vireo, bushtit, western tanager, cordilleran flycatcher, western wood-pewee, and warbling vireo. Mammal species that have been observed in the riparian areas of Rinconada Canyon include white-footed mouse, deer mouse, Zacatecan deer mouse, white-throated woodrat, montane vole, cliff chipmunk, Nuttall's cottontail, silver-haired bat, and hoary bat. Tracks or scats of American elk, mule deer,

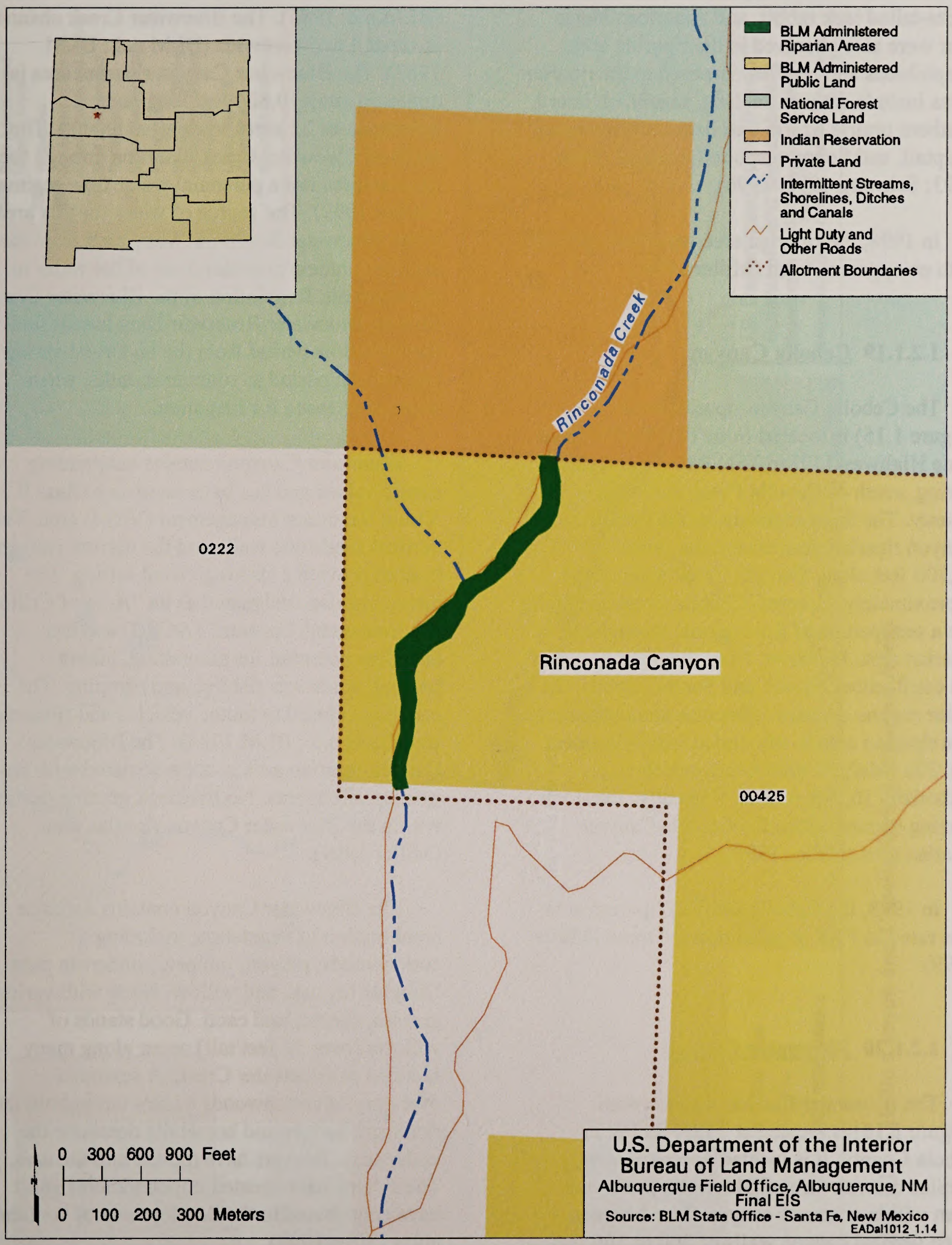

FIGURE 1.14 Rinconada Canyon Riparian Areas

white-tailed jack rabbit, and American black bear were also observed in the riparian area. Amphibians and reptiles observed in the riparian areas include canyon treefrog, sagebrush lizard, southern prairie lizard, tree lizard, little striped whiptail, and Sonoran spotted whiptail (Blair 1993; Schwarz 1995, 1996).

In 1998, the riparian area was rated as FAR with no apparent trend (Miller 1999).

1.2.1.19 Cebolla Canyon

The Cebolla Canyon riparian area (Figure 1.15) is located from T7N R10W (near State Highway 117) to T5N R10W (at Cebolla Spring, south of Cebolla Peak) in Cibola County. The three segments of the Cebolla Canyon riparian area extend for about 23,300 feet along Cebolla Creek and occupy approximately 91 acres. Cebolla Creek generally has a semiperennial flow regime through the riparian area. However, from the point between the confluence of Lobo and Sand Canyons, the water regime appears to become semiephemeral. The riparian area is associated with Allotment No. 203 (Malpais allotment), which is authorized 16,908 AUMs. Currently, livestock grazing occurs within the Cebolla Canyon riparian area (Miller 1999).

In 1998, the Cebolla Canyon riparian area was rated as FAR with an upward trend (Miller 1999).

1.2.1.20 Bluewater Canyon

The Bluewater Canyon riparian area (Figure 1.16) is located at T12N R11W in Cibola County. It is located approximately 4 miles downstream of Bluewater Reservoir Dam within a narrow canyon floor between steep vertical canyon walls of 200 to 500 feet (BLM n.d. 1983). The Bluewater Creek channel is about 4 to 5 feet wide (BLM n.d.; BLM 1983). The Bluewater Canyon riparian area is approximately 10,800 feet long and encompasses 25 acres of riparian habitat. The reach of Bluewater Creek that runs through the riparian area has a perennial water flow regime (Miller 1999). The source of water for this area is the Bluewater Reservoir. Snowmelt from the Zuni Mountains provides most of the water in the reservoir. Regulation of the Bluewater Creek flow by Bluewater Reservoir Dam has shifted the high-flow period from the historical spring (snowmelt) period to summer months, when water is released for irrigation.

Bluewater Canyon contains outstanding scenic values and has been rated as a Class II Visual Resource Management (VRM) area. The vertical sandstone walls and the narrow canyon bottom provide a striking visual setting. The canyon is also designated as an "Area of Critical Environmental Concern" (ACEC) and has excellent potential for picnicking, hiking, birding, coldwater fishing, and camping. The canyon is closed to motor vehicles and firearms use (BLM n.d.; BLM 1983). The Bluewater Canyon riparian area is not associated with any grazing allotments. No livestock grazing occurs within the Bluewater Canyon riparian area (Miller 1999).

The Bluewater Canyon contains a unique combination of vegetation, including cottonwoods, pinyon, juniper, ponderosa pine, Douglas fir, oak, and willow, along with various grasses, shrubs, and cacti. Good stands of willows (over 12 feet tall) occur along many sections of Bluewater Creek. A scattered overstory of cottonwoods occurs throughout the drainage. Sedges and horsetails dominate the understory. Beavers have moved into the area. Their dams have created impoundments and have contributed to the development of wetland areas (Silva 1998).

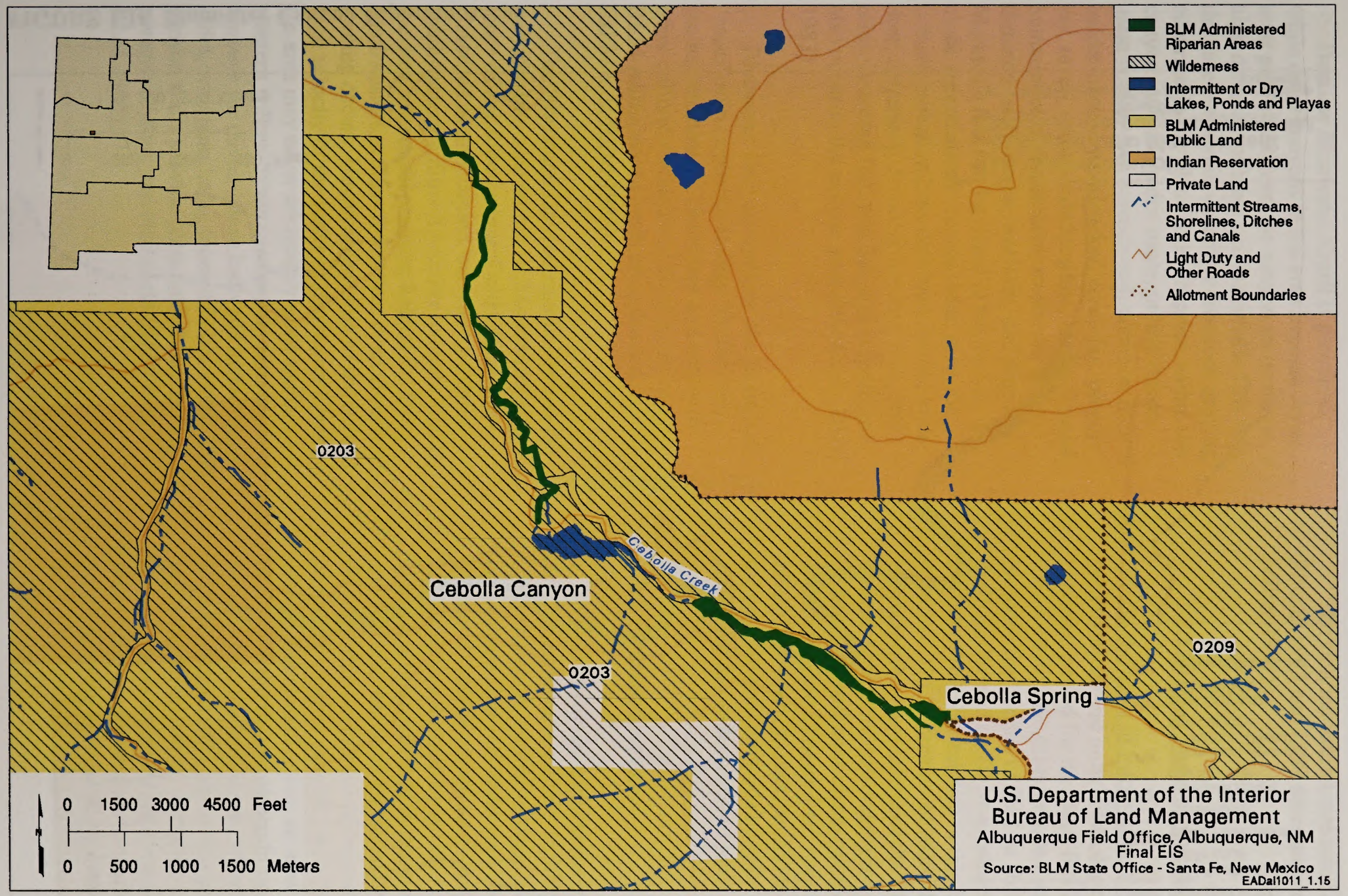

FIGURE 1.15 Cebolla Canyon and Cebolla Spring Riparian Areas

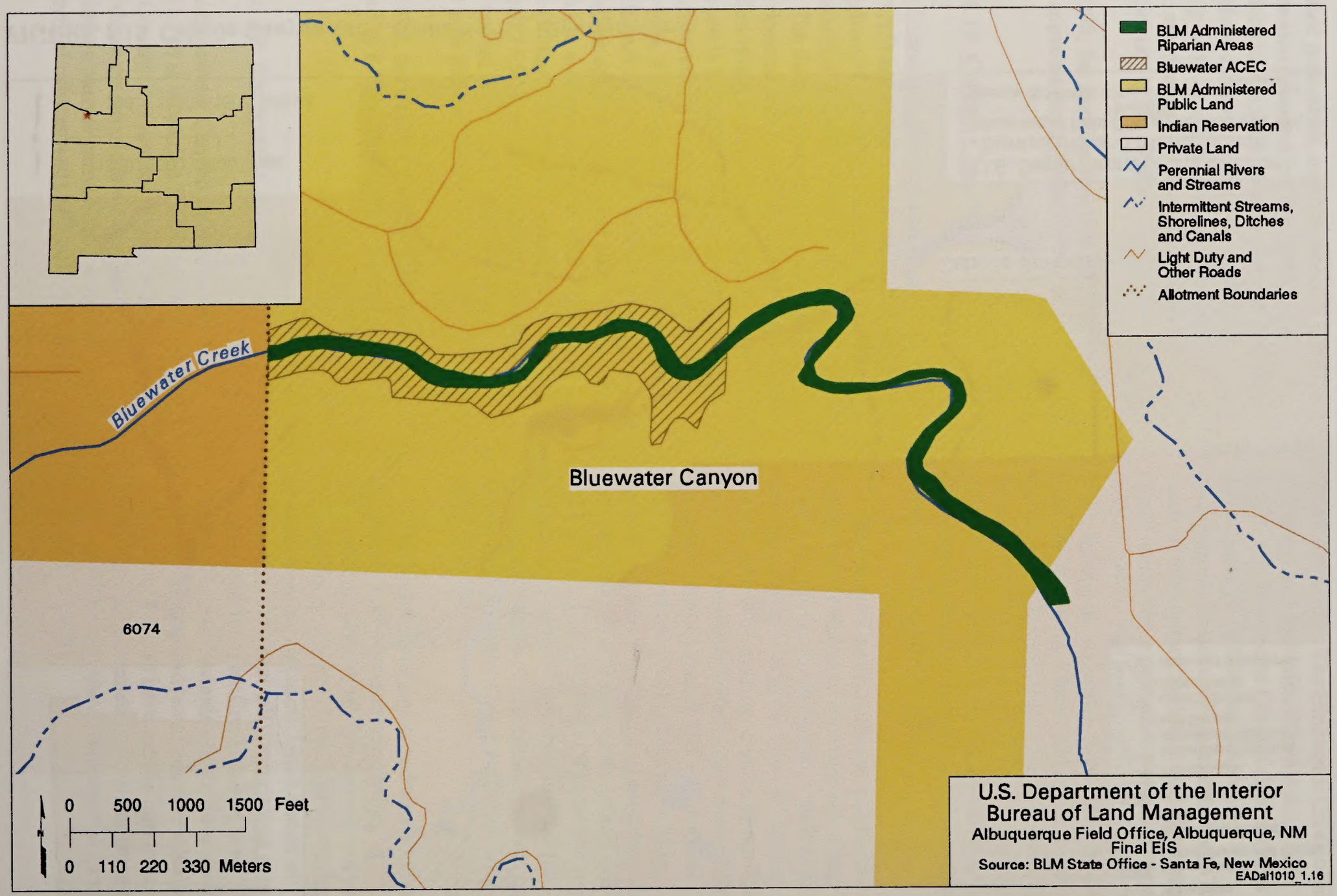

FIGURE 1.16 Bluewater Canyon Riparian Areas

Because Bluewater Creek is perennial, while other canyons in the area become dry at least part of the year, the canyon maintains a high diversity of birds and mammals. This was the case even when extensive livestock grazing occurred in the past. Birds observed within the canyon include golden eagle, prairie falcon, great horned owl, screech owl, common flicker, ladder-backed woodpecker, scrub jay, pinyon jay, raven, rufous-sided towhee, black-chinned hummingbird, flycatchers, swallows, black-throated swift, wrens, warblers, and juncos. Mammals that can be found in the canyon include striped skunk, coyote, bear, gray fox, bobcat, mountain lion, cottontail rabbit, mule deer, chipmunk, raccoon, beavers, bats, and mice. Assorted fish, reptiles, and amphibians also occur in the canyon area (BLM n.d.; BLM 1983).

Bluewater Canyon contains one identified "moki" ruin (a pueblo storage bin for corn, grains, and beans). The extent and nature of other cultural resources in the canyon on BLM-administered lands are unknown (BLM n.d.; BLM 1983).

The Bluewater Canyon riparian area is the only riparian area within BLM-administered lands of the Albuquerque Field Office that is classified as unoccupied, currently potential southwestern willow flycatcher habitat. That is, the area has suitable nesting habitat for the southwestern willow flycatcher, even though no nesting occurs. However, because of the normal high velocity of the water in Bluewater Creek, the area may never adequately meet southwestern willow flycatcher nesting criteria. Surveys for the bird have been conducted since 1994, with none being located (Silva 1998). The canyon walls provide potential habitat for the peregrine falcon and bald eagle (BLM n.d.; BLM 1983).

The riparian habitat was rated as being in PFC in 1993 and 1998 assessments (Silva 1998; Miller 1999).

1.2.1.21 Las Huertas Creek

On the basis of information supplied by organizations and individuals during the public comment period for the Draft EIS (DEIS) (BLM 1999), the Albuquerque Field Office has included the portion of the Las Huertas Creek drainage located on BLM-administered land in the list of riparian habitats in this HMP (Figure 1.17). A number of individuals and organizations have informed the BLM that Las Huertas Creek includes vegetation and hydrologic conditions characteristic of riparian conditions (see Chapter 1 of Volume 1 of the FEIS). However, to date, no formal surveys of the riparian area have been conducted by BLM staff from the Albuquerque Field Office.

1.2.2 Wetland Areas

Numerous springs and seeps occur within the jurisdictional boundary of the Albuquerque Field Office. A number of these have wetland areas associated with them (see Table 2.2 in Section 2). Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. To receive this classification, an area must meet one or more of the following conditions: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soils; or (3) the substrate is nonsoil and is saturated with water or covered with shallow water at some time during each year's growing season (BLM 1989).

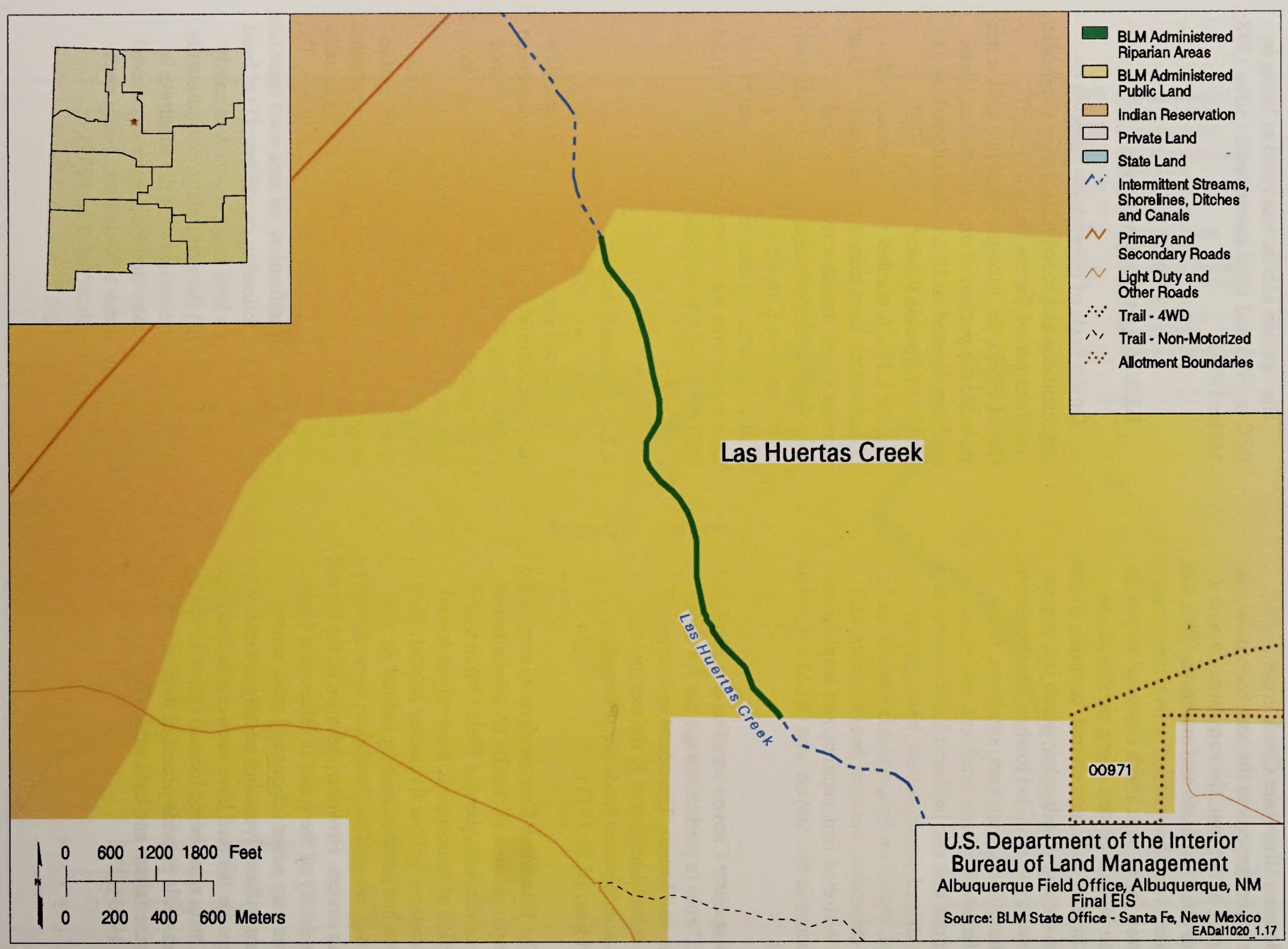

FIGURE 1.17 Las Huertas Creek Riparian Area

Examples of wetlands include marshes, swamps, wet meadows, and other riparian areas. The spring/seep areas that have wetlands associated with them in the Albuquerque Field Office Area are shown in Figures 1.12, 1.13, 1.15, and 1.18.

Similar to riparian areas, wetland areas are relatively uncommon in the West, but nevertheless they are important habitats. Wetlands perform a number of valuable functions, such as groundwater recharge and discharge, flood storage and desynchronization, shoreline anchoring and dissipation of erosive forces, sediment trapping, nutrient retention and removal, food chain support, and fish and wildlife habitat. Such areas also support active and passive recreation and provide heritage value (Adamus 1983).

Little information (especially ecological information) is available for most of the specified wetland areas in the Albuquerque Field Office area. Therefore, most of the descriptive information on the specified wetland areas is presented later in Section 2 (Table 2.2) rather than within separate narrative sections for each wetland area. However, for several of the specified wetland areas, more inclusive information was available; therefore, these areas are discussed in the following sections.

1.2.2.1 Azabache Flowing Well

The Azabache Flowing Well wetland area (Figure 1.13) is located at T16N R5W, Section 19, in McKinley County, about 18 miles west of Cabezon Peak and 18 miles northeast of San Mateo. Although this wetland area is located within the Farmington Field Office, it is being managed by the Albuquerque Field Office. The distance between the Azabache Flowing Well and Rincon Grande Detention Dam is about 0.75 mile and encompasses 16 acres of riparian-wetland habitat. The Rincon Grande Detention Dam pond contains about 1 acre of riparian habitat (BLM 1991a; Miller 1999).

The Azabache Flowing Well was originally drilled as a uranium exploration well; however, the BLM converted it into a water well in 1956. The associated 16-acre shallow, marsh-like wetland area drains into a large detention dam (Rincon Grande). Drainage from the dam flows into the Seccion Arroyo, which in turn flows into the Arroyo Chico. The well and reservoir provide water for wildlife. A 1,000-foot underground pipeline was constructed from the Azabache Flowing Well to a single watering trough in an area outside the wetland to allow cattle to get water from April to October, while the Seccion Arroyo cattle continue to use runoff water below the Rincon Grande Retention Dam. The wetland is also an important riparian habitat (BLM 1991a).

Riparian-wetland vegetation in the Azabache Flowing Well area is confined to the narrow strip along the channel that flows from the well to the Rincon Grande Detention Dam and to the impoundment area created by the dam. The pond behind the dam is overgrown with cattail and bulrush. The wetland areas along the channel have a diverse plant community that includes rushes, sedges, spike rushes, arrowhead, ditchgrass, reeds, smartweeds, horsetail, desert saltgrass, manna grass, and foxtail. Saltcedar is the dominant overstory plant. Upland vegetation is a grassland dominated by galleta grass, alkali sacaton, shadescale, broom snakeweed, bottle brush squirreltail, sand dropseed, fourwing saltbush, and Indian ricegrass (BLM 1991a).

Birds occurring in the Azabache Riparian Area wetland habitat include killdeer, sandpipers, mourning dove, swallows, teal, coots, mallards, and flycatchers. Wildlife species occurring in the adjacent uplands include cottontail rabbit, scaled quail, horned

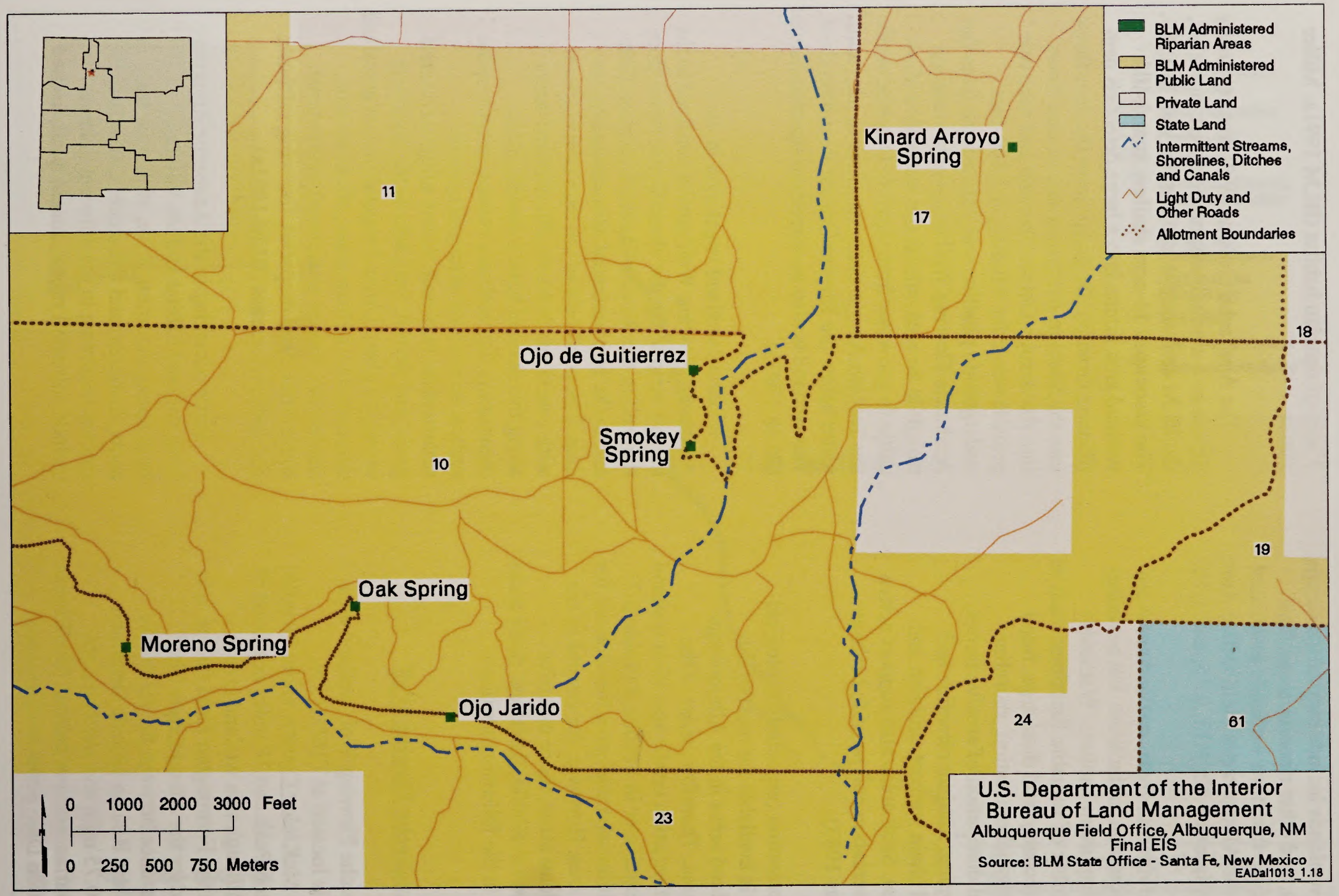

FIGURE 1.18 Springs of the Canon Jarido and Mesa Portales Areas

lark, meadowlark, coyote, and black-tailed jackrabbit (BLM 1991a).

In 1993, the riparian area was assessed as FAR with an upward trend, and in 1998, the area was reassessed as PFC (Silva 1998; Miller 1999).

1.2.2.2 Rio Salado Community (San Ysidro Marsh Area)

The Rio Salado Community wetland area (Figure 1.12) (San Ysidro Marsh Area) is in the Rio Salado Community riparian area located at T15N R1E, Section 12, in Sandoval County. It is a marshy wetland that extends from the bridge crossing State Highway 44 at San Ysidro upstream along the north bank of the Rio Salado. The wetland area has an average width of about 200 feet and is over 3,000 feet long; it encompasses approximately 12.6 acres (see Section 2, Table 2.2). Two riparian exclosures (of 6.5 and 25.5 acres) have been established within the Rio Salado Community wetland area. These areas enclose the riparian/marsh area plus some upland habitat. The exclosures were made to exclude livestock grazing so as to improve habitat for aquatic macroinvertebrates, waterfowl, raptors, neotropical migrant birds, and other riparian wildlife. The marsh area is fed by irrigation water overflow/tailwater from the Jemez River (BLM 1992c,d; Miller 1999).

The area is bordered by Russian olive and saltcedar along the Rio Salado channel. Aquatic plants in the marsh include several species of sedges and rushes plus cattail, pondweed, water plantain, arrowhead, spike rush, bulrush, duckweed, smartweed, buttercup, mare's tail, horsetail, speedwell, cinquefoil, foxtail barley, and Kentucky blue grass. The marsh area does not represent the potential vegetation of the remainder of the Rio Salado Community riparian area, but rather is an anomaly that is controlled by surface and subsurface inputs from the Jemez River Valley (Silva 1998).

The Rio Salado Community wetland area presently has good stands of willows (10 to 12 feet tall) with scattered cottonwood, saltcedar, and Russian olive trees as an overstory throughout the area. The smaller riparian exclosure has a very dense stand of saltcedar and Russian olive trees. Cottonwood and willow poles have been planted several times over the past few years (Silva 1998).

This wetland area has been identified, but not yet designated, as a watchable wildlife viewing site (Miller 1999). Migrating southwestern willow flycatchers have been observed within the Rio Salado Community wetland area, but to date, no nesting southwestern willow flycatchers have been found there. The Rio Salado Community wetland area has been classified as potential short-term southwestern willow flycatcher habitat (Silva 1988). The wetland area has a rating of PFC (Miller 1999).

1.2.2.3 Cebolla Spring

The Cebolla Spring wetland (Figure 1.15) area is located about 33 miles south of Grants, New Mexico, at T5N R10W, Section 12, in Cibola County. Cebolla Spring is located at an elevation of 7,415 feet. The spring was developed by homesteaders during the 1920s to irrigate field crops. Since then, the development has fallen in disrepair, with excess water spreading over the wetland area. The Cebolla Spring area is a 7.2-acre wet meadow fed by Cebolla Spring (BLM 1998a; Miller 1999).

Fencing of the area was completed in 1994. Livestock have been excluded from the wetland area surrounding the spring since then (Miller 1999). By 1998, the wetland area exhibited improved vigor, and the density and

diversity of wetland plants had increased. A striking diversity of age classes among the vegetation has not yet developed, but the community was moving in that direction when assessed. The long-term effects of natural saline deposits are of concern (BLM 1998b).

The wetland areas around the Cebolla Spring contain rushes and sedges. The potential upland plant community is dominated by western wheatgrass, with small amounts of vine mesquite, alkali sacaton, and fourwing saltbush. However, in deteriorated areas, the uplands are dominated by blue grama, galleta grass, spike muhly, mat muhly, rabbitbrush, and broom snakeweed (BLM 1998b).

The area around Cebolla Spring has potential habitat for a number of songbirds, raptors, and Miriam's turkey. It is also used by mule deer and elk, and habitat is present for most small mammals native to the area. The spring area and meadow provide habitat for amphibians (BLM 1998b).

An intensive survey for cultural resources was conducted along the proposed fenceline at Cebolla Spring. No materials were noted within the project area, with the exception of a few scattered pieces of rusty metal apparently associated with earlier spring development efforts (BLM 1998b).

The riparian habitat of the Cebolla Spring wetland area exclosure is rated as being in PFC (Miller 1999).

1.2.3 Spring and Seep Areas

An indeterminate number of water sources occur within the jurisdictional boundaries of the Albuquerque Field Office that have, to date, remained undocumented and unassessed. However, about 100 developed springs, undeveloped seeps, and flowing wells have been identified. Water quality varies considerably from one spring to the next. Most are potable but not desirable for domestic use because of high concentrations of sulfates and other dissolved solids. Most of the water is acceptable for livestock use. Springs and seeps that have a shallow water table with vegetation indicative of permanent water are considered to be riparian areas. Table 2.3 (Section 2) summarizes the environmental baseline information for the 26 specified springs and seeps administered by the Albuquerque Field Office. The springs and seeps addressed in Table 2.3 do not have additional wetland areas associated with them. Therefore, the acreage associated with each of these springs and seeps is considered to be 0.1 acre. Functional ratings for these springs and seeps have not yet been determined (i.e., they are "Unknown"). Figures 1.9, 1.13, and 1.18 through 1.24 show the locations of the specified spring and seep areas.

Most of the springs and seeps are scattered throughout the region; however, a few areas of geographical concentration are known. The Mesa Portales area, with 12 springs, is one of these. This area includes the Dos Valles, Mesa Portales, and Eagle Mesa grazing allotments. This area is in State Game Management Area 7 (elk and mule deer) and Area 2 (pronghorn antelope). The El Banquito Mesa area contains 21 springs and/or wells and includes the Azabache, Seccion Arroyo, El Banquito, and Mesa Cordata grazing allotments. Also included is State Game Management Area 9 (mule deer and elk). The Mesa Chivato area has 23 springs. Grazing allotments in this area include Chico Crossing, Ignacio Chavez Grant, Cerros Salado, and Casa Salazar. State Game Management Area 9 also occurs in this area.

The Rio Salado area has 13 springs and includes the San Ysidro Community and Long Ridge grazing allotments. State Game Management Area 9 also extends into this area. The Arroyo Colorado area has 6 springs, all

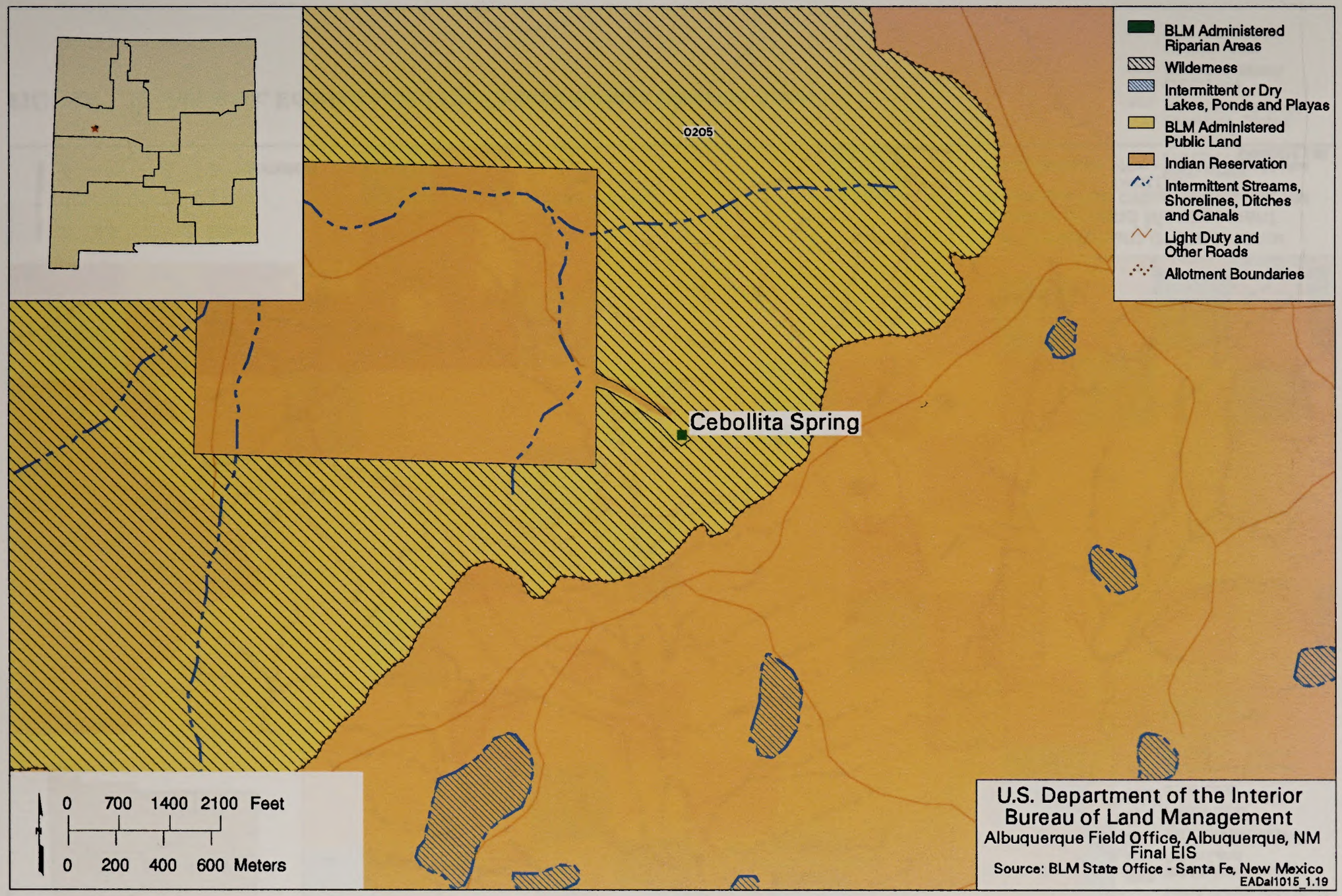

FIGURE 1.19 Cebollita Spring Riparian Areas

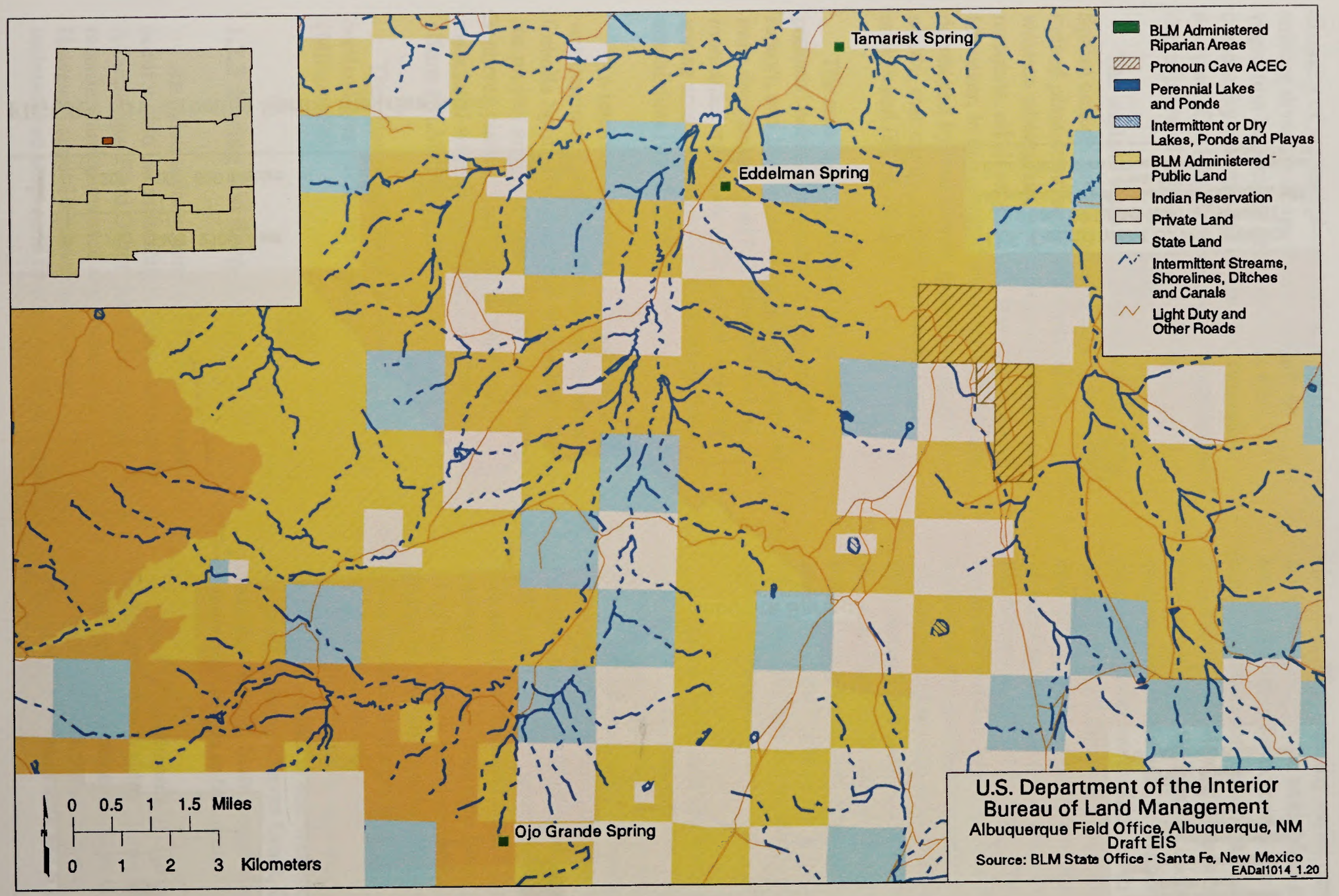

FIGURE 1.20 Tamarisk, Eddelman, and Ojo Grande Springs Riparian Areas

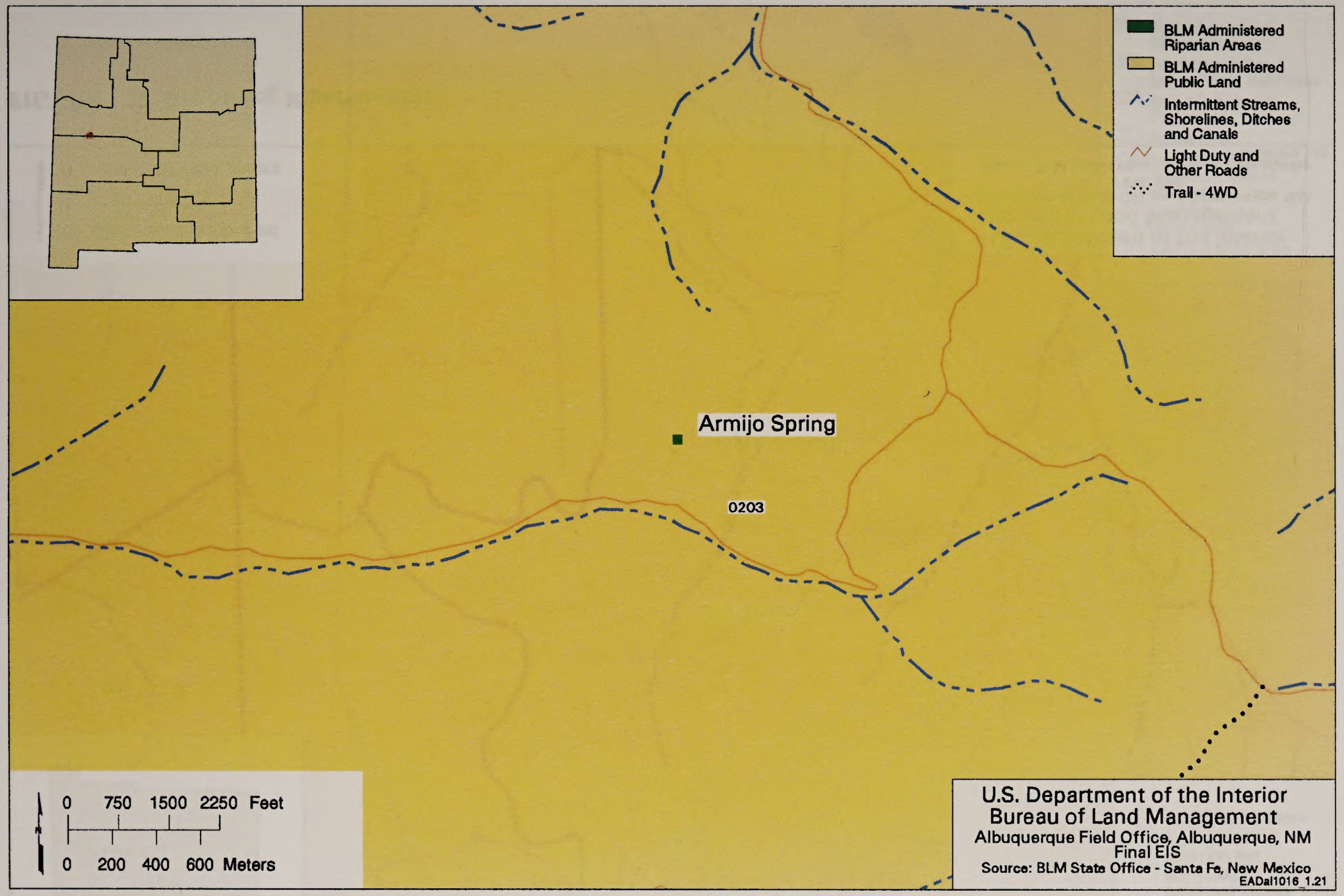

FIGURE 1.21 Armijo Spring Riparian Area

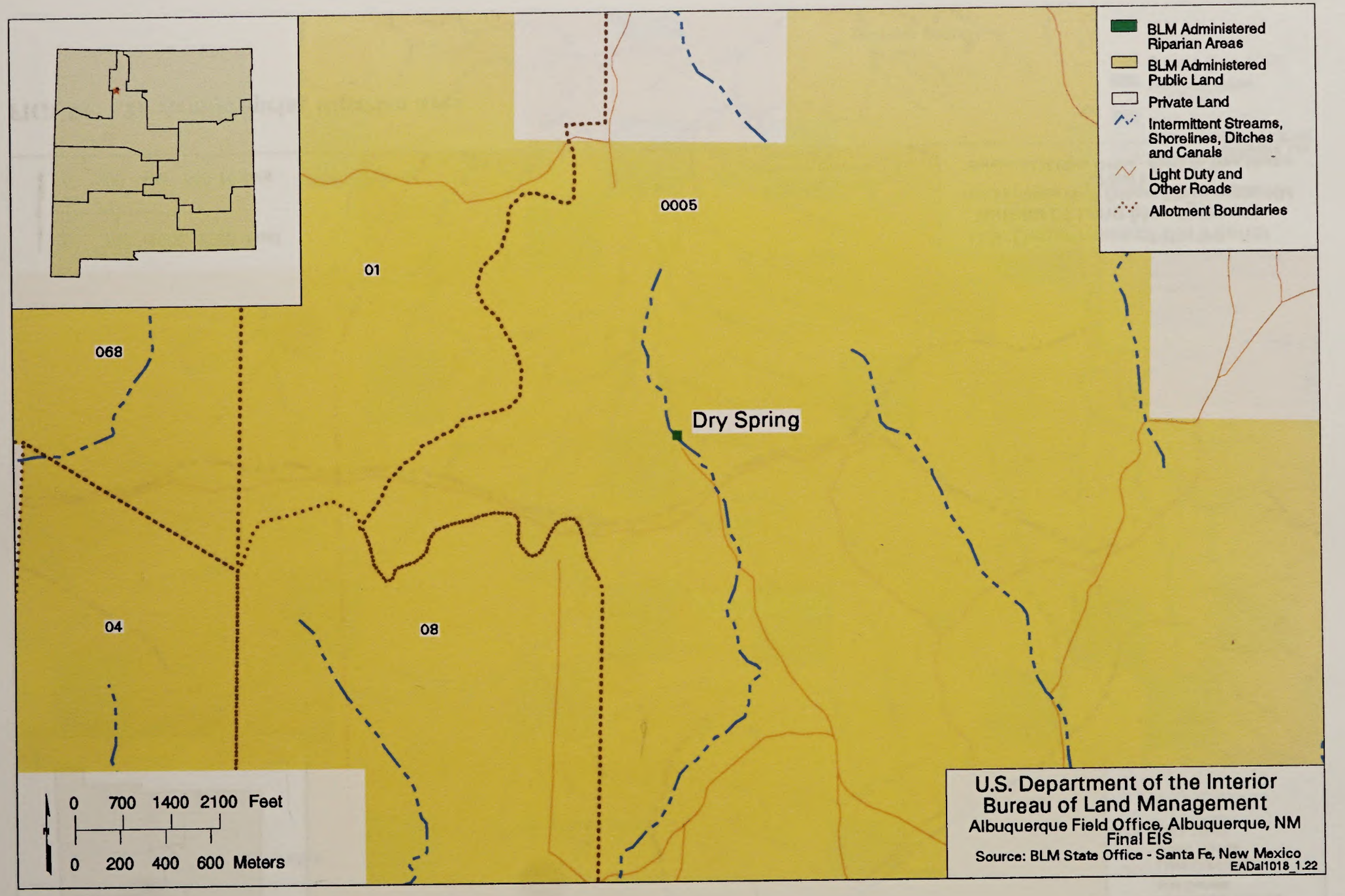

FIGURE 1.22 Dry Spring Riparian Area

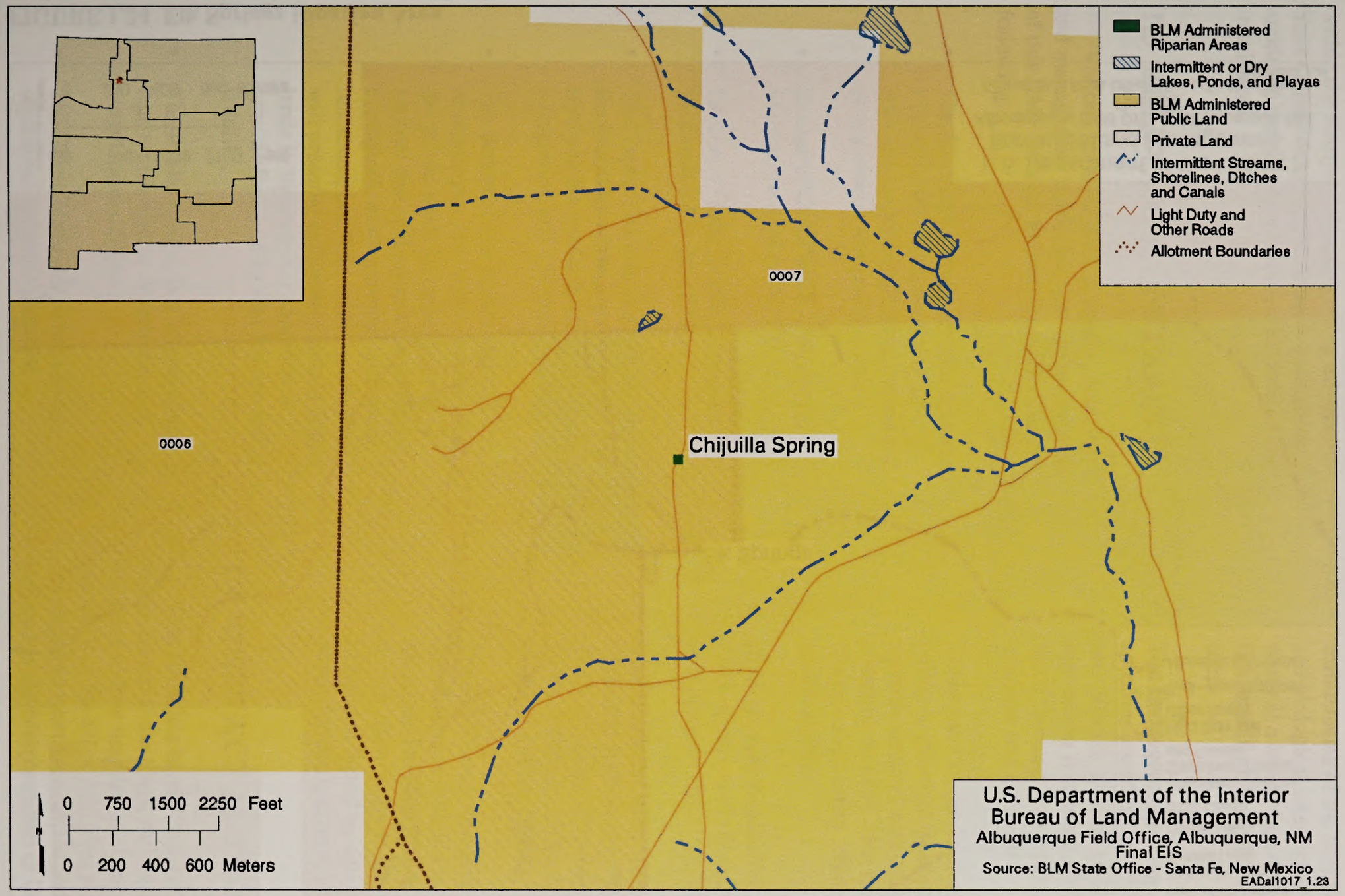

FIGURE 1.23 Chijuilla Spring Riparian Area

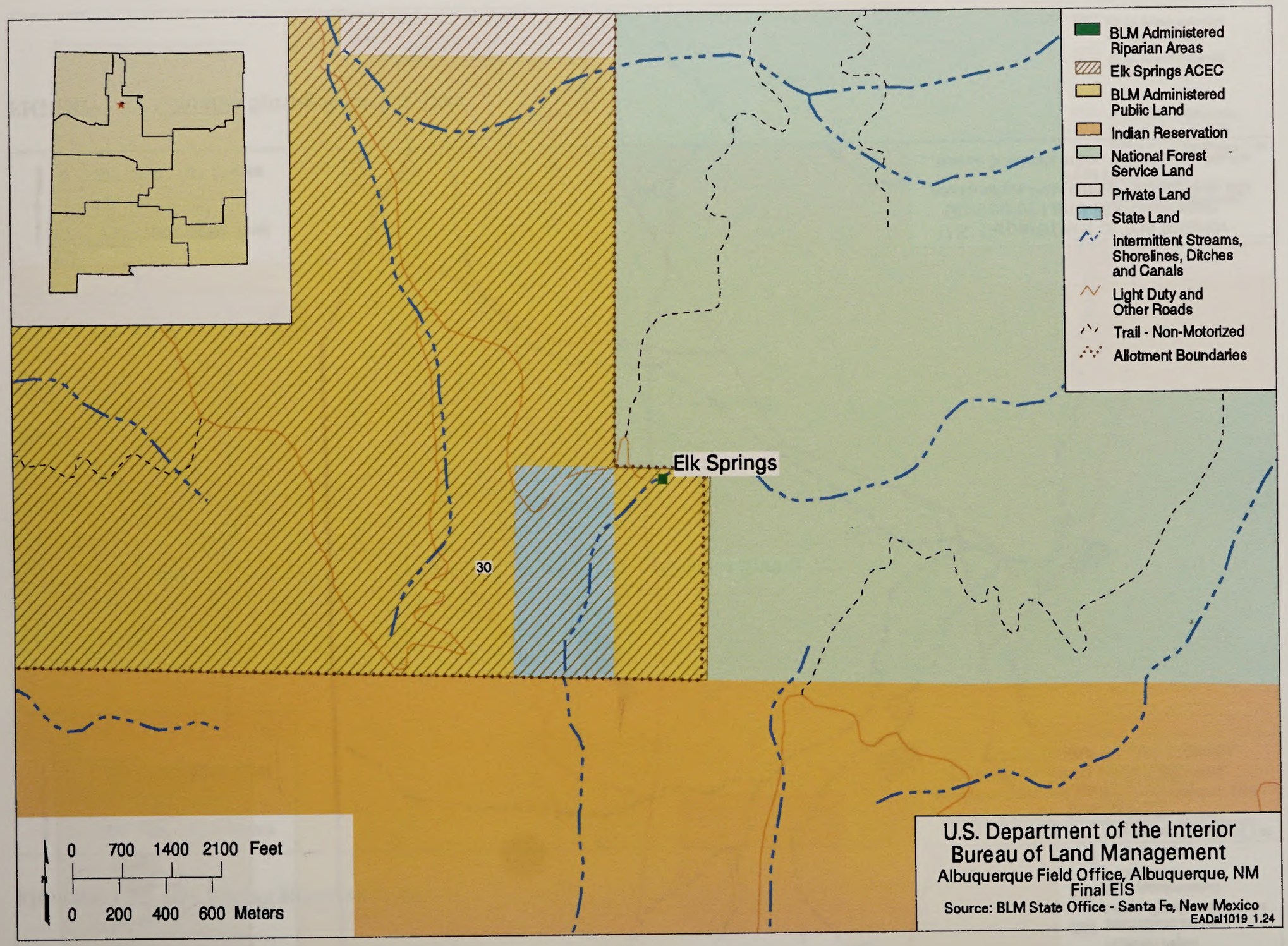

FIGURE 1.24 Elk Springs Riparian Area

within the Arroyo Colorado grazing allotment. State Game Management Areas 3 (pronghorn antelope) and 13 (mule deer and elk) also occur in this area.

1.3 RELEVANT CONSTRAINTS

Various laws, policies, program guidance, and management plans that apply to preparation of this HMP include, but are not limited, to the following:

- The Rio Puerco Resource Management Plan (BLM 1992h), including all relevant decisions affecting actions and developments in riparian areas;
- Executive Order 1198 - Floodplain Management (May 24, 1977);
- Executive Order 11990 - Protection of Wetlands (May 24, 1977);
- The Taylor Grazing Act, which directs the Secretary of the Interior to stop injury to the public lands by preventing overgrazing and soil deterioration;
- The Federal Land Policy and Management Act, which requires that the public lands be managed in a manner that will protect the quality of ecological, environmental, and water resources, and that, where appropriate, will preserve and protect certain public lands in their natural condition to provide food and habitat for fish and wildlife;
- The Public Rangelands Improvement Act, which directs improvement of rangeland conditions;
- The Clean Water Act, which has as objectives the restoration and maintenance of the chemical, physical, and biological integrity of the nation's water at a level of quality that protects fish, shellfish, wildlife, and recreational use;
- The Endangered Species Act, which specifies consultation with the U.S. Fish and Wildlife Service (USFWS) regarding actions that could affect federally listed threatened or endangered species of plants and animals;
- Department of the Interior and BLM policy to maintain, restore, or improve riparian-wetland ecosystems to achieve a healthy and PFC that assures biological diversity, productivity, and sustainability;
- *BLM Manual Transmittal Sheet: 1737–Riparian-Wetland Area Management* (BLM 1992f);
- BLM Riparian Area Management Technical References (TRs) 1737-3 and 1737-5 through 1737-15 (BLM 1989; 1990a; 1992e,g; 1993c,d; 1994a,c; 1996a,b; 1997a; 1998a);
- The *Rio Puerco Resource Area Southwestern Willow Flycatcher Management Plan* (Silva 1998), which relates specifically to the management of habitat, including riparian-wetland areas, for that endangered species.

1.4 SIKES ACT AUTHORITY

This HMP has been written to meet the requirements of the Sikes Act (Public Law 93-452) and will be implemented under the authority of the Sikes Act. This plan has been developed to meet the policies and guidance outlined in the Memorandum of Understanding

(MOU) between the BLM and the New Mexico Department of Game and Fish (NMDG&F) (MOU-NM-232 [1990]) and the Cooperative Agreement among the U.S. Department of Agriculture Forest Service, the NMDG&F, and the BLM (Agreement No. 14226910A 98000b [1998]) on implementation of the Sikes Act.

2 LAND STATUS AND ADMINISTRATION

2.1 LAND STATUS

The distribution of BLM-administered riparian areas and the status of land jurisdiction throughout the Albuquerque Field Office are shown in Figures 1.2 and 1.4. Individual riparian, wetland, and spring-seep areas under BLM jurisdiction are shown in context with lands under the jurisdiction of others in Figures 1.5 through 1.24.

2.2 ADMINISTRATION

Information related to BLM-administered riparian areas in the Albuquerque Field Office is provided in Table 2.1. Table 2.2 provides information related to BLM-administered wetland areas in the Albuquerque Field Office. Information related to BLM-administered spring-seep areas in the Albuquerque Field Office is provided in Table 2.3.

TABLE 2.1 Baseline Information for the Specified Riparian Areas within the Albuquerque Field Office

Name of Riparian Area	Water Source (Water Regime)	Riparian Size: Length (feet) (Area [acres])	Functional Rating[a] (Date)	Associated Allotments (AUMs)[b]	Current Livestock Access Status	Southwestern Willow Flycatcher Habitat Status[c]
Rio Gallina	Rio Gallina (perennial)	2,000 (10)	FAR - U (1998)	Jaquez (121)	Grazed	-
Rito Leche	Rito Leche (perennial)	2,800 (9.6)	PFC (1998)	Administrative Site (Incidental)	Not authorized (access on south bank needs fencing)	PLT
Señorito Canyon	Señorito Creek (perennial)	9,800 (35)	PFC (1998)	Forty Four (312) and Señorito Community (124)	Excluded	PLT
Wilson Canyon	Rio Puerco (intermittent)[d]	12,000 (77)	FAR - U (1998)	Wilson Canyon (240)	Excluded	PLT
Two Bridges	Rio Puerco (intermittent)	10,000 (30)	N/A (-)	Brandy (3,073)	Grazed	-
Coal Creek	Rio Puerco (intermittent)	18,500 (100)	FAR - U (1998)	None	Excluded	PLT
Cerros Colorados	Rio Puerco (intermittent)	12,500 (43)	FAR - NA (1998)	Cerros Colorados (1,284)	Permittee does not generally use the riparian area	PLT
Cachulie	Rio Puerco (intermittent)	11,500 (26)	FAR - D (1998)	None	Excluded	PLT
San Luis Community	Rio Puerco (intermittent)	6,000 (22)	FAR - D (1998)	San Luis Community (904)	Grazed	PLT

TABLE 2.1 (Cont.)

Name of Riparian Area	Water Source (Water Regime)	Riparian Size: Length (feet) (Area [acres])	Functional Rating[a] (Date)	Associated Allotments (AUMs)[b]	Current Livestock Access Status	Southwestern Willow Flycatcher Habitat Status[c]
Lost Valley	Rio Puerco (intermittent)	21,600 (103)	FAR - U (1998)	Lost Valley (2,366)	Grazed	PLT
Cabezon Community	Rio Puerco (intermittent)	10,200 (45)	FAR - U (1998)	Cabezon Peak (623)	Grazed	-
Rio Salado Community	Rio Salado (intermittent)	18,000 (143)	NF(FAP) (1998)	Rio Salado (216)	Grazed	-
Long Ridge	Rio Salado (intermittent)	7,000 (36)	NF(FAP) (1998)	Long Ridge (307)	Grazed	-
Arroyo Chico – Azabache	Arroyo Chico (intermittent)	43,200 (380)	FAR - D (1998)	Azabache (1,909)	Grazed	PLT
Arroyo Chico – Charlotte's Well	Arroyo Chico (perennial)	3,300 (15)	PFC (1998)	Azabache (1,909)	Excluded	PLT
Arroyo Chico – Chico Crossing	Arroyo Chico (intermittent)	50,000 (206)	NF (1998)	Chico Crossing (1,889)	Grazed	-
Guadalupe Community	Rio Puerco (ephemeral)	10,500 (77)	NF(FAP) (1998)	Guadalupe (580)	Grazed	-
Rinconada Canyon	Rinconada Creek (intermittent)	3,000 (15)	FAR - NA (1998)	T. Arvisu (272)	Grazed	-

TABLE 2.1 (Cont.)

Name of Riparian Area	Water Source (Water Regime)	Riparian Size: Length (feet) (Area [acres])	Functional Rating[a] (Date)	Associated Allotments (AUMs)[b]	Current Livestock Access Status	Southwestern Willow Flycatcher Habitat Status[c]
Cebolla Canyon	Cebolla Creek (intermittent)	23,300 (91)	FAR - U (1998)	El Malpais (16,908)	Grazed	-
Bluewater Canyon	Bluewater Creek (perennial)	10,800 (25)	PFC (1998)	None	Excluded	CP
Las Huertas Creek	Las Huertas Creek	TBD[e]	TBD	TBD	TBD	TBD

[a] D = trend downward; FAP = functioning at potential; FAR = functional – at risk; NA = trend not apparent; NF = nonfunctional; NR = not rated; PFC = proper functioning condition; U = trend upward; N/A = not applicable.

[b] AUMs = animal unit months.

[c] CP = currently potential; PLT = potential long-term; - = none or potential unknown.

[d] Intermittent = semiperennial or semiephemeral.

[e] TBD = to be determined.

Sources: Miller (1999); Silva (1998).

TABLE 2.2 Baseline Information for the Specified Wetland Areas within the Albuquerque Field Office

Wetland Area (Recharge Source - Water Regime)[a]	Area (acres)	Functional Rating[b] (Date)	Livestock Access Conditions	Comments
Cebolla Spring (Cebolla Mesa - P)	7.2	PFC (1998)	Area fenced, livestock excluded	Natural exit, partially developed, not captured. Associated with Allotment No. 203 (El Malpais).
Charlotte's Well (U - P)	1.5	PFC (1998)	Area fenced, livestock excluded	Uranium test well (1960s), not developed, not captured, fenced in 1996. Associated with Allotment No. 42 (Azabache).
Azabache Flowing Artesian Well (U - P)	16.0	PFC (1998)	Area fenced, livestock excluded	Uranium test well (1960s), partially developed (well head), captured into the Rincon Grande impoundment and livestock trough (future plans to connect to a pipeline system). Associated with Allotment No. 42 (Azabache).
Rio Salado Community (Jemez Valley irrigation - SP)	12.6	PFC (1998)	Area fenced, livestock excluded	Irrigation tailwater source. Associated with Allotment No. 64 (San Ysidro Community).
Ojo Frio (Mesa Chivato - P)	1.5	NR	Area fenced, livestock excluded	Natural exit, developed with spring box circa 1930s, captured and piped to a trough outside of the exclosure. Associated with Allotment No. 43 (Chico Crossing).
La Lena Artesian Well (Mesa Chivato - P)	0.5	PFC (1998)	Area partly fenced, livestock partly excluded	Well, developed, captured. Associated with Allotment No. 43 (Chico Crossing).
Mound Springs (Nacimiento geothermal - P)	50.0	NR	Area unfenced, grazed (5,549 AUMs)	Natural exits, not developed, not captured. Associated with Allotment No. 218 (Arroyo Colorado).

TABLE 2.2 (Cont.)

Wetland Area (Recharge Source - Water Regime)[a]	Area (Acres)	Functional Rating[b] (Date)	Livestock Access Conditions	Comments
Oak Spring (Mesa Portales - P)	3.0	NR	Area fenced, livestock excluded	Natural exit, not developed, not captured. Associated with Allotment No. 23 (Eagle Mesa).
Chamisa Losa Spring & Canyon (Mesa Chivato - SP)	0.25	NR	Area fenced, livestock excluded	Natural exit, developed, captured. (This source appears to exit in several places within the canyon. Protection may be indicated.) Associated with Allotment No. 43 (Chico Crossing).
Ojo de las Yeguas (Mesa Chivato - SP)	0.25	NR	Area unfenced, grazed (1,889 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 43 (Chico Crossing).
Road Spring (Mesa Chivato - P)	0.2	NR	Area unfenced, grazed (1,889 AUMs)	Natural exit, partially developed, captured in a dirt stock tank. Associated with Allotment No. 43 (Chico Crossing).

[a] P = perennial; SP = semiperennial; U = unknown.

[b] NR = not rated: PFC = proper functioning condition.

Source: Miller (1999).

TABLE 2.3 Baseline Information for the Specified Spring/Seep Areas within the Albuquerque Field Office

Spring/Seep Area (Recharge Source - Water Regime)[a]	Livestock Access Conditions	Comments
Cebollita Spring (Unknown - P)	Area unfenced, grazed (1,521 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 205 (Los Polares).
Los Indios Canyon (BLM) Spring (Mesa Chivato - P)	Area fenced, livestock excluded	Natural exit, developed, partially captured. Associated with Allotment No. 42 (Azabache).
Coal Spring (Mesa Chivato - P)	Area fenced, livestock excluded	Natural exit, developed with pipe collector, partially captured. Historic water source - Azabache Station - Santa Fe to Prescott, Arizona. Associated with Allotment No. 42 (Azabache).
Azabache Station Spring (Mesa Chivato - P)	Area unfenced and grazed (1,909 AUMs)	Natural exit, developed with spring box, uncaptured. Associated with Allotment No. 42 (Azabache).
Ojo Jarido Spring (Mesa Portales - P)	Area fenced, livestock excluded	Natural exit, developed with a pipe collector circa 1930s, captured and piped to a trough outside of the enclosure. This source has highly alkaline water. The spring is considered of special value to local Navajo chapters. Associated with Allotment No. 23 (Eagle Mesa).
Moreno Spring (Mesa Portales - P)	Area fenced, livestock excluded	Natural exit, partially developed, partially captured and piped to troughs. Associated with Allotment No. 23 (Eagle Mesa).
Toruno Spring (Mesa Chivato - P)	Area unfenced, grazed (2,653 AUMs)	Natural exit, partially developed, captured in a plastic-lined stock tank. Associated with Allotment No. 50 (Ignacio Chavez).
Ojo Atascoso Spring (Mesa Chivato, Punchinella exclosures - P)	Area fenced, livestock excluded	Natural exit, developed, captured. This area has Parish's alkali grass. Associated with Allotment No. 43 (Chico Crossing).
Chupadera Spring (Mesa Chivato - SP)	Area fenced, livestock excluded	Natural exit, partially developed for wildlife, partially captured and piped to bird bath. Associated with Allotment No. 42 (Azabache).

TABLE 2.3 (Cont.)

Spring/Seep Area (Recharge Source - Water Regime)[a]	Livestock Access Conditions	Comments
Ojo Navajo Spring (Mesa Chivato - U)	Area unfenced, grazed (1,656 AUMs)	Natural exit, not developed, not captured. Since this area has not been documented, its status is unknown. Associated with Allotment No. 49 (El Banquito).
Lagunitras Spring & Canyon Complex (Mesa Chivato - P)	Area partially fenced, livestock partially excluded	Natural exit, partially developed, not captured. Associated with Allotment No. 43 (Chico Crossing).
Ojo Alamo Spring (Mesa Chivato - SP)	Area unfenced, grazed (1,889 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 43 (Chico Crossing).
Seccion Arroyo Spring (Mesa Chivato - P)	Area unfenced, grazed (1,909 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 42 (Azabache).
Little Joe (Montoyo) Spring (Mesa Chivato - P)	Area unfenced, grazed (1,909 AUMs)	Natural exit, partially developed, partially captured and piped to troughs. Associated with Allotment No. 42 (Azabache).
Kinaird Arroyo Spring (Mesa Portales - P)	Area fenced, livestock excluded	Natural exit, not developed, not captured. Associated with Allotment No. 23 (Eagle Mesa).
Smokey Spring (Mesa Portales - P)	Area unfenced, grazed (1,643 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 23 (Eagle Mesa).
Ojo de Guitierrez Spring (Mesa Portales - P)	Area unfenced, grazed (1,643 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 23 (Eagle Mesa).
Chijuilla Spring (Chijuilla Mesa - P)	Area fenced, livestock excluded	Natural exit, not developed (old work in disrepair), not captured. Associated with Allotment No. 7 (Chijulla Community).
Dry Spring (Continental Divide - P)	Area fenced, livestock excluded	Natural exit, originally developed with a pipe collector circa 1930s, captured and piped to a trough outside of the exclosure. Reconstructed in 1994. Associated with Allotment No. 5 (Dry Springs).

TABLE 2.3 (Cont.)

Spring/Seep Area (Recharge Source - Water Regime)[a]	Livestock Access Conditions	Comments
Elk Spring (Nacimiento Mtns. - P)	Area fenced, livestock excluded	Natural exit, not developed (old work in disrepair), not captured. Associated with Allotment No. 30 (Elk Springs).
Barrel Spring (Mesa Chivato - SP)	Area unfenced, grazed (1,889 AUMs)	Natural exit, developed, captured. Associated with Allotment No. 43 (Chico Crossing).
Tamarisk Spring (Mesa del Oro - P)	Area unfenced, grazed (5,549 AUMs)	Natural exit, originally developed circa 1930 with a dirt tank to collect water. Associated with Allotment No. 218 (Arroyo Colorado).
Eddlemann Spring (Arroyo Colorado: geothermal - P)	Area unfenced, grazed (5,549 AUMs)	Natural exit, developed circa 1930s, captured and piped to troughs. Associated with Allotment No. 218 (Arroyo Colorado).
Ojo Grande Spring (Mesa del Oro - P)	Area unfenced, grazed (5,549 AUMs)	Natural exit, originally developed with a pipe collector circa 1930s, captured and piped to storage tanks and troughs. Associated with Allotment No. 218 (Arroyo Colorado).
Armijo Spring (Mesa above Sand Canyon [York Ranch] - P)	Area fenced, livestock excluded	Natural exit, developed with a spring box circa 1930s, old piping is no longer functional. Associated with Allotment No. 203 (El Malpais).
Soda Spring (Marine deposits, Nacimiento: Geothermal - P)	Area unfenced, area grazed (5,549 AUMs)	Natural exit, not developed, not captured. Associated with Allotment No. 218 (Arroyo Colorado).

[a] P = perennial; SP = semiperennial; U = unknown.

Source: Miller (1999).

3 HABITAT MANAGEMENT

3.1 APPROACH

This HMP combines the structural components of BLM Manual 6780 (BLM 1981) with Alternative 2 (Adaptive Management) of the DEIS (BLM 1999) to develop the management approach, planned actions, evaluation and monitoring, and HMP progress reporting contained in BLM Manual 6780. Specific information related to individual riparian areas from BLM files, as well as from comments received on the analysis in the DEIS, were also used. The BLM Riparian Area Management TR Series 1737 was used, where appropriate, to provide technical guidance on the field activities required to implement the HMP. For example, TR 1737-14, *Grazing Management for Riparian-Wetland Areas* (BLM 1997b), provides specific information on the probable response of brushy species regrowth potential to different grazing strategies.

By using the adaptive management approach and specific field activity and guidance, the HMP provides a road map for achieving specific desired future conditions for all riparian habitats that occur within the Albuquerque Field Office. However, like all road maps, the HMP allows field office staff to respond to changes as new information is developed and the need to adjust to new conditions (management directions) arises.

Under the adaptive management strategy, the BLM will assign a high priority to implementing those management practices identified in current BLM management guidance for restoring and protecting all riparian habitats under BLM jurisdiction. For riparian areas, this alternative will require a specific focus on riparian management, and decisions regarding other land management activities will be constrained to limit or prevent adverse impact on riparian areas.

An adaptive management framework represents a proactive approach to planning and implementing strategies for restoring and protecting riparian habitats on the basis of a set of activities intended to achieve measurable improvement of riparian habitat and function. The management actions will be implemented irrespective of other public land administrative actions or functions. Riparian management will receive staffing and budget resources independent of other Albuquerque Field Office business requirements or work tasks. The HMP is based on the concept that riparian habitats are critical elements in the landscape and that specific management actions are necessary to enable them to function at their full potential. BLM policy, direction, and guidance are specifically formulated to accomplish this objective and prescribe a set of comprehensive practices for riparian and aquatic habitat management.

Implementation of adaptive management practices will involve the following procedures:

Step 1: Survey and analyze riparian conditions;

Step 2: Use survey results to describe a desired future condition and to identify appropriate management actions;

Step 3: Implement management actions;

Step 4: Monitor the success of the management actions; and

Step 5: Modify the management actions, if necessary, on the basis of the monitoring results.

The ordered sequence of these procedures describes an adaptive management approach

that provides a means of changing management activities when monitoring data show that current actions are no longer required or when current actions are not achieving a desired restoration or enhancement goal as specified in Step 2. All information is collected and analyzed to judge success in achieving the endpoints associated with (1) PFC and (2) a desired vegetation composition and structure. The tasks will be carried out for each riparian area (as well as any future riparian areas that would be administered by the Albuquerque Field Office) on the basis of site-specific characteristics and a desired future condition. When adaptive management practices are being implemented, the development of new management actions will be derived from the results of baseline riparian area surveys and analyses.

The specific field activities for implementing the HMP model are derived from BLM TR Series 1737.

3.2 MANAGEMENT OBJECTIVES

Because the HMP represents a dynamic process of data collection, assessment of riparian conditions based on data analysis, and continuing evaluation of the ability to meet defined goals, management objectives will be achieved from completion of the following two tasks:

Survey and Analyze Riparian Conditions: Baseline data collection and analysis will follow the guidelines of TR 1737-11 [(*Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas)* (BLM 1994a)] and 1737-15 [(Riparian Area Management, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas (BLM 1998a)]. The Albuquerque Field Office will develop an implementation plan (including schedule, budget, and quality control measures) and conduct all field surveys necessary for determining the current condition of each specified riparian and wetland area. The outcome of this action will be a written determination (available to the public) of the status of riparian habitat conditions, including natural and human-caused conditions. Part of the summary and analysis of riparian conditions will be based on the findings of previous riparian surveys and data collection efforts.

Define a Desired Future Condition and Required Management Actions: Results of the survey and analysis of riparian conditions will be used to define and develop the desired future condition of individual riparian segments administered by the BLM Albuquerque Field Office. Defining the desired future condition will take into account (1) potential vegetation communities that could develop at the site; (2) erosion and deposition conditions; (3) current activities that may be detrimental to achieving PFC; (4) the ability of the area to develop and support threatened and endangered species habitat; (5) the characteristics of the surrounding land use; (6) potential use conditions that could be accommodated at the site; and (7) management actions needed to restore and/or protect the long-term ecological condition of the riparian segments, wetlands, or seeps. Included in the definition of the desired future condition will be a list of measurable endpoints that can be monitored to determine the status of the riparian ecosystem over time. Finally, a set of management goals will be developed to assist in determining the required budget and staffing needs for implementing the riparian and aquatic HMP.

3.3 PLANNED ACTIONS

Table 3.1 lists the general types of management activities that could be implemented by the Albuquerque Field Office, depending on the

TABLE 3.1 Riparian Area Management Practices

Practice	Objective	Comment
Fencing	Isolate degraded habitats.	Consider big-game migration, public access, beaver activity, falling trees, and vehicles.
Prescribed burns	Modify vegetation communities.	Primarily for upland areas; prudent use in areas of special concerns (e.g., endangered species).
Forestry practices	Improve woody vegetation communities.	Cover or canopy manipulation of coniferous and deciduous stands, woody debris, and slash management.
Vegetation plantings	Reestablish native communities.	Cuttings work well for woody vegetation; insert below water table; seeding generally occurs in fall or spring; rake after application.
Opportunities from mineral activities	Mitigate mineral exploitation effects.	Reclaim to utilize beneficial runoff or drainage; riparian habitat development in association with evaporation ponds; water spreaders to direct runoff from road construction.
Structures	Control erosion.	Bank protection, gradient restoration, water energy-transfer structures, sediment traps, spring developments, removal or modification of channelization structures, etc.
Beaver complex cycling	Transform pioneer woody vegetation into riparian community.	Cycling of beaver complexes; special management to maximize vegetation regrowth rates; maximize initial construction population followed by reductions for maintenance levels.
Bank stabilization	Accelerate soil and water conservation efforts.	Anchoring green trees (or discarded Christmas trees) into banks; log structures (10–12 in. diameter) at base of bank; rock in wire baskets (gabions).
Recreation planning	Protect, manage, and improve habitats.	Maintain visitor compliance; retain vegetation; locate sites outside of riparian areas; prohibit vehicles from uncontrolled stream access; plant dense vegetation to screen and reduce use of sensitive areas; install signs; designate sites within riparian areas.
Road relocation, construction, and maintenance	Protect, manage, and improve habitats.	Locate outside of riparian area; prohibit vehicles from leaving roads; install signs; minimize impact to stream bank and vegetation; revegetate disturbed areas; design and maintain culverts to allow fish passage and free debris flow; haul waste material away.
Public education	Provide information to public land users on protection methods.	Develop environmental education and interpretative displays designed to direct visitor or user behavior in or adjacent to riparian areas.

Source: BLM (1992e).

findings developed under the baseline data collection and written baseline determination. The activities cited include a summary of management techniques outlined in BLM TR 1737-6 [*Management Techniques in Riparian Areas* (BLM 1992e)]. In addition, the Albuquerque Field Office will continue to implement current management activities that are consistent with the requirements identified under Step 1, Survey and Analyze Riparian Conditions.

Management activities will also include specific grazing management protocols that will be established for each riparian area on the basis of guidance provided in BLM TR 1737-14 [*Grazing Management for Riparian-Wetland Areas* (BLM 1997a)]. The protocols will be implemented for all allotments that include riparian and wetland habitats. The protocols will include one or more of the following grazing treatments:

- *Riparian Pasture*: Establish a combination of upland and riparian vegetation that will be managed as one unit within a larger allotment.

- *Winter Grazing*: Allow limited grazing in riparian areas when the vegetation is dormant.

- *Long-Term Rest*: Defer grazing from riparian areas for a period of approximately 10 years. During the 10-year period, collect vegetation and erosion data to determine if riparian pastures or winter grazing may be established. Additional monitoring during the 10-year period will be conducted to determine the status of other riparian endpoints, such as endangered species habitat.

- *Total Exclosure*: Exclude livestock use permanently.

3.4 EVALUATION AND MONITORING

The Albuquerque Field Office will develop a written monitoring plan as part of the HMP. The monitoring plan will include schedule, data collection protocols, measurement endpoints, and management outcomes for all riparian habitats. The monitoring plan will use guidance material in BLM TRs 1737-7 through 1737-9 (BLM 1992g; 1993c,d) and 1737-11 through 1737-15 (BLM 1994a; 1996a,b; 1997a; 1998a). The monitoring results will be used to determine the success of the management actions and as a basis for suggesting any necessary changes. The monitoring plan will include procedures that enable the Albuquerque Field Office to identify and/or quantify the following conditions:

- Desired condition of riparian vegetation, with an estimate of vegetation structure and species composition;

- Erosion and deposition conditions within the riparian area;

- Status of threatened and endangered species;

- Threats and opportunities from surrounding land uses;

- Status of domestic livestock grazing;

- Status of management actions taken to date;

- Wildlife use of the riparian area;

- Recreational use of the riparian area;

- Success of public education tools to effect changes in human use of riparian areas; and

- Estimated time remaining to meet stated protection and enhancement goals for the riparian habitat developed under Step 1.

Implementation of an adaptive management approach requires a commitment to modifying riparian habitat management activities if monitoring shows that the proposed desired future condition would not be achieved if the current set of management activities would be continued in the future. Provision for modifying management activities builds positive feedback capabilities into the HMP. In addition, modifications potentially allow use conditions to change as (1) riparian habitat conditions improve (achieving PFC), and (2) vegetation conditions indicate that plant community processes have become stable, pointing to positive future conditions (e.g., succession, elimination of nonnative species, and reproduction of desired native species).

3.5 IMPLEMENTATION

Current and planned management of the riparian and wetland areas in the Albuquerque Field Office can be described in terms of the adaptive management tasks. For example, site visits by interdisciplinary teams of trained specialists to assess the functioning condition of riparian areas apply to adaptive management Step 1. Defining PFC as the desired future condition of an individual riparian area addresses adaptive management Step 2. Additional actions may be required to implement adaptive management for specific riparian areas. For example, a monitoring plan may have to be developed to comply with adaptive management Step 4. Table 3.2 describes current management actions and their relationship to the adaptive management tasks as well as additional planned actions for each of the riparian areas.

The Albuquerque Field Office will implement the HMP model by systematically applying the five adaptive management tasks to riparian and wetland areas located on public lands administered by the BLM. Within the framework of the HMP model, management actions will be based on the site-specific characteristics of each riparian area. Because each riparian area is composed of a unique set of hydrological, ecological, soil, and human use characteristics (see Sections 1.2.1, 1.2.2, and 1.2.3), the adaptive management approach will allow flexibility in achieving PFC and restoration and protection of threatened and endangered species habitat. Because the HMP utilizes an adoptive management framework, the site-specific ecosystem dynamics that control the natural functions of each riparian area will be continually monitored to ensure that stewardship goals are achieved. Planned management actions can be modified in order to maintain and or restore the necessary ecological and hydrological properties of each riparian area. A routine monitoring program will be a component of the planned actions and will provide Albuquerque Field Office staff with the data required to make future management decisions.

The Albuquerque Field Office will implement the HMP model by systematically applying the five adaptive management task steps to riparian areas located on public lands administered by the BLM. Within the framework of the HMP model, management actions will be based upon the site-specific characteristics of each individual riparian area. Because each riparian area is composed of a unique set of hydrological, ecological, soil and human use characteristics (see Tables 2.1, 2.2, and 2.3), the adaptive management approach will allow management flexibility in achieving PFC and restoration and protection of threatened and endangered species habitat. Because the HMP utilizes an adaptive management framework, the site-specific ecosystem

TABLE 3.2 Current Management Actions and Adaptive Management Tasks for the Riparian Areas Administered by the Albuquerque Field Office[a]

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Rio Gallina	Access road crosses stream, beaver activity present, domestic livestock grazing, no tasks or projects planned or implemented.	PFC rating (1998): FAR-U.	Restrict grazing, improve visitor management, redesign stream crossing.	Dormant season grazing only, improve ford or construct new bridge.	PFC survey every 2 years until PFC; greenline survey every 5 years until PFC.	Fencing may be required to limit domestic livestock grazing.
Rito Leche	Domestic livestock grazing not permitted, north bank fenced in 1986, beaver activity present, south fence needs survey and repair.	PFC rating (1998): PFC miscellaneous monitoring and surveys (e.g., greenline transects, photopoints, breeding bird counts; macroinvertebrate survey).	Restrict domestic livestock access, improve educational and recreational opportunities, potential long-term SWF habitat.	Improve fencing on the south bank, develop nature trail, maintain existing physical boundaries.	PFC survey every 6 years; greenline survey every 6 years.	Cadastral boundary line survey may require several years to complete.
Senorito Canyon	Domestic livestock grazing does not occur, four riparian exclosures (three in 1992, one in 1996), saltcedar treatment since 1995, native woody plantings since 1989.	PFC rating (1998): PFC miscellaneous monitoring and surveys (e.g., greenline transects, photopoints, breeding bird counts, macroinvertebrate survey).	Continue the restriction of domestic livestock grazing, maintain restoration activities, potential long-term SWF habitat.	Maintain riparian exclosures.	PFC survey every 6 years; greenline survey every 6 years.	Cottonwood plantings have not been successful to date, determine cause; work with watershed committee on a long-term plan for entire watershed.

TABLE 3.2 (Cont.)

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Wilson Canyon	Domestic livestock use not permitted, riparian exclosure constructed in 1993, two ponds constructed in 1998, saltcedar control, cottonwood and willow plantings since 1993.	PFC rating (1998): FAR-U, miscellaneous monitoring and surveys (e.g., greenline transects, photopoints, breeding bird counts, macroinvertebrate).	Continue to exclude livestock use, potential long-term SWF habitat.	Maintain exclosures.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Elk appear to be damaging cotton-woods, implement protective measures, as necessary.
Two Bridges	Potential future (2001+) riparian area, no tasks or projects have been completed, domestic livestock grazing is currently permitted.	Stream flow has not yet been returned to the original channel. Baseline surveys have been completed.	Restrict grazing use and restore water flow and habitat vigor.	Develop riparian exclosure, planned new water releases in or about 2001.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Rio Puerco Management Group to restore the flow of the Rio Puerco within this channel section in or about 2001.
Coal Creek	Riparian exclosures constructed 1996–1998, some saltcedar treatment completed.	PFC rating (1998): FAR-U, miscellaneous monitoring and surveys (e.g., greenline transects, photopoints, macro-invertebrate survey).	Riparian segment has been withdrawn from the allotment, continue livestock exclusion, potential long-term SWF habitat.	Maintain exclosures.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Determine the progress of the habitat within the exclosure as it results in PFC.
Cerros Colorados	Invasive species (saltcedar, rabbitbrush, big sage) control and plantings of native woody species continuing.	PFC rating (1998): FAR-U, miscellaneous monitoring and surveys (e.g., photopoints).	Evaluate riparian pasture and formalize dormant season grazing use, potential long-term SWF habitat.	Maintain riparian pasture, develop a plan with surrounding landowners to refine livestock use pattern.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Evaluation of livestock use and vegetative response, as managed within the dormant season.

TABLE 3.2 (Cont.)

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Cachulie	Fencing along the east channel bank prevents livestock access into the Rio Puerco channel. Use from the west is still possible.	PFC rating (1998): FAR-D.	Negotiate the restriction of livestock with private landowners. Potential long-term SWF habitat.	Consider fencing the west channel bank to restrict livestock use in the Rio Puerco.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Inability to achieve an agreement with private landowners regarding access to the Rio Puerco.
San Luis Community	Fencing along the east channel bank prevents livestock from having easy access into the Rio Puerco channel. Use from the west is still possible. No tasks or projects have been completed.	PFC rating (1998): FAR-D.	Evaluate dormant season grazing, potential long-term SWF habitat.	New fences to manage access by domestic livestock.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC, SWF survey every year.	Evaluation of livestock use and vegetative response, as managed within the dormant season.
Lost Valley	Riparian exclosure constructed in 1994, small monitoring exclosure constructed in 1997.	PFC rating (1998): FAR-U. Monitoring and surveys (e.g., greenline transects, photopoints, breeding bird counts).	Evaluate dormant season grazing, potential long-term SWF habitat.	Maintain monitoring exclosures.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC, monitor vegetation in test exclosure every two years.	Evaluation of livestock use and vegetative response, as managed within the dormant season in achieving PFC.
Cabezon Community	No tasks or projects have been completed.	PFC rating (1998): FAR-U.	Manage domestic livestock access to improve riparian conditions.	Evaluate dormant season grazing, maintain water gaps.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Determine if fences need to be constructed to control access by domestic livestock.
Rio Salado Community	No tasks or projects have been completed.	PFC rating (1998): Nonfunctional (FAP).	Highly saline environment precludes active restoration program, monitor only.	None planned.	PFC survey every 6 years, greenline survey every 6 years.	Current water and soil quality (highly saline) preclude management actions.

TABLE 3.2 (Cont.)

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Long Ridge	No tasks or projects have been completed.	PFC rating (1998): Nonfunctional (FAP).	Highly saline environment precludes active restoration program, monitor only.	None planned.	PFC survey every 6 years, greenline survey every 6 years.	Current water and soil quality (highly saline) preclude management actions.
Arroyo Chico – Azabache	Riparian exclosure constructed in the western portion in 1998.	PFC rating (1998): FAR-D, miscellaneous monitoring and surveys (e.g., photopoints).	Establish dormant season grazing, a part of the area has been designated long-term SWF potential habitat.	Construct gap fences, develop cooperative agreement with adjacent landowners to control domestic livestock grazing.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC, monitor vegetation in exclosure after each use period.	Use exclosure data to develop domestic livestock grazing program.
Arroyo Chico – Charlotte's Well	Riparian exclosure (first half 1996, second half 1999), water trough and pipeline provided outside the exclosure.	PFC rating (1998): FAR-U, miscellaneous monitoring and surveys (e.g., greenline transects, photopoints, breeding bird counts, macroinvertebrate survey).	Continue to exclude domestic livestock, establish water rights, potential long-term SWF habitat.	Maintain exclosures.	PFC survey every 6 years, greenline survey every 6 years.	Develop plan of action to establish water rights.
Arroyo Chico – Chico Crossing	Limited cottonwood planting in 1998.	PFC rating (1998): NF.	Curtail livestock access and use. Restore native vegetation.	Determine if fences can be constructed in wilderness study area (WSA), control tamarisk, continue cottonwood planting.	PFC survey every 2 years until PFC, greenline survey every 5 years.	Develop a strategy that will result in the exclusion of domestic livestock grazing in a WSA.

TABLE 3.2 (Cont.)

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Guadalupe Community	No tasks or projects completed.	PFC rating (1998): NF (FAP).	Marginal riparian location, steep banks, current high flows, and degraded upstream watershed conditions preclude the establishment of vegetation.	None planned.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	If PFC surveys show that riparian areas can be improved because of positive changes in the watershed, develop a new domestic livestock grazing plan.
Rinconada Canyon	No tasks or projects completed.	PFC rating (1998): FAR, no trend.	Exclude livestock.	Exclude livestock with use agreement or fenced exclosure; potential bird watching area; possible hiking trail development.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC, aquatic biota survey.	Develop overall plan in cooperation with other land managers that will result in PFC for all riparian locations in the canyon.
Cebolla Canyon	No tasks or projects completed.	PFC rating (1998): FAR-U.	Develop grazing strategy that results in PFC.	Create riparian pasture.	PFC survey every 2 years until PFC, greenline survey every 5 years until PFC.	Determine if riparian pasture results in PFC, if not develop fencing and exclude from domestic livestock grazing.
Bluewater Canyon	Entire area exclosed in 1989, ACEC status, willows planted in 1989, internal fences and old house removed 1991–1992, parking area established in 1992.	PFC rating (1998): PFC.	Continue current management, identified as current SWF habitat.	Exclude livestock, visitor day use only, hiking only on designated trails.	PFC survey every 6 years, greenline survey every 6 years, SWF survey every year.	Manage as ACEC status lands.

TABLE 3.2 (Cont.)

Riparian Areas	Current Management Situations, Practices, and Activities	Adaptive Management Tasks: Survey and Analyze Riparian Areas	Define Required Management Actions	Implement Management Actions	Monitor Management Actions	Modify Management Actions, if Necessary
Las Huertas Creek	No actions to date.	None completed to date.	PFC survey completed by 2001.	Management actions will be based on results of PFC survey.	PFC survey every 6 years, greenline survey every 6 years.	Results of initial PFC survey required to define management actions.

[a] D = downward; FAP = functioning at potential; FAR = functional–at risk; NF = nonfunctional; PFC = proper functioning condition; SWF = southwestern willow flycatcher; and U = upward.

dynamics that control the natural functions of each riparian area will be continually monitored to ensure that stewardship goals are achieved. Planned management actions can be modified in order to maintain and or restore the necessary ecological and hydrological properties of each riparian area. A routine monitoring program will be a component of the planned actions and will provide Albuquerque Field office staff with the data required to make future management decisions.

Table 3.2 shows the set of planned management and monitoring actions the Albuquerque Field Office will undertake for each riparian area. Past and ongoing management actions, in combination with the most recent survey data for each riparian area, provide the context for the planned management actions. In addition, if riparian areas contain current or potential habitat conditions for threatened and endangered species, planned management actions have been designed to protect and enhance habitat for these species, especially as these actions relate to establishing vegetation communities that could support southwestern willow flycatchers. Indeed, a key objective of the planned management actions is the restoration and maintenance of riparian vegetation conditions.

The tasks and activities described in Tables 3.2 through 3.4 do not require the use of new or enhanced methodologies for determining the current condition of riparian habitats, estimating future potential condition, developing required management practices, or conducting monitoring activities. Rather, implementing the HMP involves the use of well-documented riparian management and monitoring procedures (see Section 3.1) set within the context of an adaptive management strategy. For example, site visits by interdisciplinary teams of trained specialists from the Albuquerque Field Office will assess the functioning condition of individual riparian areas in order to implement adaptive management Step 1 (Survey and Analyze Riparian Conditions). A desired future condition of PFC and restoration of threatened and endangered species habitat is addressed under adaptive management Step 2 (Define a Desired Future Condition and Required Management Actions). In addition, a monitoring plan will be developed to comply with adaptive management Step 4 (Monitor the Success of Management Actions). Because riparian conditions are a function of variable climatic, meteorological, and ecological conditions and ongoing management actions, monitoring results could show the need for additional or modified management actions to maintain or meet the desired future condition for each riparian area. The HMP model allows the Albuquerque Field Office to incorporate adjustments in riparian management actions to respond to new or changing conditions in each riparian area (Step 5: Modify Management Actions).

The Albuquerque Field Office will employ a set of management actions designed to protect all wetlands, springs, and seeps under BLM administration. While a number of actions have already been implemented to protect and enhance wetlands, springs, and seeps (see Tables 2.2 and 2.3), future management activities on all of these riparian areas will follow the following adaptive management protocol:

Initial Survey. A PFC survey will be completed by 2002 on all wetlands, springs, and seeps to determine current condition and use. The survey will include the establishment of a photopoint and a listing of the type and condition of all structures and improvements within the riparian area.

Determine Management Strategy. On the basis of the survey results, a determination of actions needed to protect or enhance each riparian area will be made in 2002. The actions will incorporate measures that allow the

TABLE 3.3 Management Tasks and Projects Planned or under Consideration for the Specified Wetland Areas within the Albuquerque Field Office Jurisdiction

Wetland Area	Management Tasks and Projects Planned or under Consideration
Cebolla Spring	Develop ponds in the exclosure, with livestock water outside of the exclosure; extend the fence across Cebolla Creek to protect the developing riparian area of approximately 3 acres; remove the area from the associated allotment by official decision.
Charlotte's Well	Remove exotic woody plants, provide long-term cover, replace with native species where possible; conduct macroinvertebrate and fish surveys; place nest boxes in and around lentic area; possible leopard frog transplant site; remove the area from the associated grazing allotment by official decision.
Azabache Flowing Well	Increase open water, provide island and improve for waterfowl nesting habitat; modify drop pipe to raise water level and broaden surface area; remove exotic woody plants and replace with natives, where possible; due to presence of halogeton (noxious weed), careful treatment of the population should be undertaken.
Rio Salado Community	Continue to develop the nature trail; expand the boardwalk across the marsh; maintain treatment of saltcedar and continue with plantings; continue breeding bird, bat, and neotropical bird surveys.
Ojo Frio	Assess and maintain the area, including the associated lotic segment; exclude the riparian area from the allotment by official decision; continue alkali grass monitoring.
La Lena Artesian Well	Extend the fence around the whole lentic area; replace the artesian well connection to provide more efficient wetland supply and livestock water.
Mound Springs	Assess and maintain the sources; establish special status for this area; remove the area from the associated allotment by official decision; survey for rare and sensitive plants and insects.
Oak Spring	Assess and maintain the source.
Chamisa Losa Spring and Canyon	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo de las Yeguas	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Road Spring	Assess and maintain the source; because of the extent of existing and potential lentic vegetation and accessibility to livestock, the area will be protected (e.g., fenced); water will be made available if supply and flow allow.

Source: Miller (1999).

TABLE 3.4 Management Tasks and Projects Planned or under Consideration for the Specified Spring/Seep Areas within the Albuquerque Field Office Jurisdiction

Spring/Seep Area	Management Tasks and Projects Planned or under Consideration
Cebollita Spring	Assess and discuss protection of spring and associated lotic reach.
Los Indios Canyon (BLM) Spring	Assess and maintain the area, including the associated lotic reach.
Coal Spring	Assess and maintain the area.
Azabache Station Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo Jarido Spring	Assess and maintain the source.
Moreno Spring	Assess and maintain source.
Toruno Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo Atascoso	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions; study and monitor the Parish's alkali grass.
Chupadera Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo Navajo Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Lagunitras Spring and Canyon Complex	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo Alamo Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Seccion Arroyo Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Little Joe (Montoya) Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Kinaird Arroyo Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.

TABLE 3.4 (Cont.)

Spring/Seep Area	Management Tasks and Projects Planned or under Consideration
Smokey Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Ojo de Guitierrez	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Chijuilla Spring	Assess and maintain the source; no plans to repair and replace watering facilities; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Dry Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Elk Spring	Assess and maintain the source; trespass problem must be addressed; acquire the 90 acres of New Mexico State land downstream with the intent of protecting and developing more riparian habitat.
Barrel Spring	Assess and maintain the source; remove livestock water pipe; fence the area; increase lentic water supply.
Tamarisk Spring	Assess and maintain the source; evaluate the need and benefit of further development and protection (e.g., fencing); saltcedar must be treated and replaced with native vegetation.
Endelmann Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions (this is a unique water source that should be officially protected, and further development should be curbed).
Ojo Grande Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.
Armijo Spring	Assess and maintain the source.
Soda Spring	Assess and maintain the source; further development and protection (e.g., fencing) will depend upon assessment and conditions.

Source: Miller (1999).

attainment of PFC, especially related to the protection, enhancement, or establishment of natural vegetation communities. All management actions will include total exclusion of domestic livestock grazing within the riparian vegetation zone.

Implement Management Strategy. The Albuquerque Field Office will begin implementing the management actions in 2003, on the basis of the survey completed in 2002. The actions could include fencing to exclude domestic livestock grazing, construction or rehabilitation of watering devices, changes in water use permits, or acquisition of water rights.

Implement Monitoring Program. A monitoring program will include a PFC assessment in the third and ninth year, beginning in 2003. Vegetation condition and measurement assessments (greenline survey) will be conducted every sixth year beginning in 2004.

Ongoing Maintenance of Structures. All wetlands, springs, and seeps that have structures (e.g., fences, watering devices) will be visited every two years to determine the need for maintenance actions. Required maintenance will be preformed no later than one year after the need for maintenance has been identified.

3.6 PROGRESS REPORTING

Adaptive management includes built-in features to evaluate and monitor the progress and success of implemented management practices and to modify them as necessary to ensure accomplishment of desired results. As the management actions indicated in Tables 3.2 through 3.4 for each riparian, wetland, and spring/seep area are prescribed, implemented, and evaluated, documentation will be accomplished with the use of BLM Form 6780-2, Habitat Management Plan Progress Report (Figure 3.1) (BLM 1981).

Illustration 4
Form 6780-2
(.31If3)

6780 - HABITAT MANAGEMENT PLANS

Habitat Management Plan Progress Report

Form 6780-2
(July 1981)
(Formerly 6620-3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION MONITORING	DATE COMPLETED

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

FIGURE 3.1 BLM Form 6780-2: Habitat Management Plan Progress Report (Source: adapted from BLM 1981)

4 COORDINATION WITH OTHER BLM PROGRAMS, OTHER AGENCIES AND ORGANIZATIONS, AND THE PUBLIC

Riparian and aquatic habitat program management is traditionally accomplished in BLM through coordination with other resource management programs; for example, by modifying domestic livestock grazing practices or limiting mineral development activities in or adjacent to riparian areas. Not only will that type of coordination continue, but this HMP also places special emphasis and priority on improving and protecting riparian areas by identifying management actions that may be implemented separately from other programs. These could include conducting scientific studies and analyses, manipulating vegetation composition, and installing bank stabilization facilities to accomplish specific riparian management objectives. Close coordination with other BLM programs in implementing these actions is critical to ensuring their success and maximizing their effectiveness.

This HMP was developed with the assistance of an interdisciplinary team of BLM resource program specialists to begin the necessary coordination process. It is important that this coordination within BLM continue as implementation of the HMP proceeds.

Organizations external to BLM that were consulted during preparation of this HMP include the USFWS and the NMDG&F. In addition, other organizations that were informed or contacted during preparation of this HMP included the New Mexico Congressional delegation, the Governor's Office, county government offices, tribal government offices, other state and federal agencies, state academic institutions, and several nongovernment organizations. A complete list of all organizations involved is contained in the *Draft Environmental Impact Statement for Riparian and Aquatic Habitat Management in the Albuquerque Field Office – New Mexico* (DEIS) (BLM 1999). In addition, the general public was invited to review and comment on the DEIS; the results of that involvement are documented in Volume 1 of the Final EIS (FEIS).

4 COORDINATION WITH OTHER BLM PROGRAMS, OTHER AGENCIES AND ORGANIZATIONS, AND THE PUBLIC

5 WILDLIFE ECONOMICS

The goal of riparian-wetland area management described in this HMP is to maintain, restore, improve, protect, and expand the riparian habitats in the Albuquerque Field Office so that they are in PFC for their productivity, biological diversity, and sustainability. When riparian-wetland areas are functioning properly, they exhibit healthy characteristics that contribute positively to the sustainability of natural systems. The benefits of these contributions include the following:

- Purifying water by removing contaminants;
- Reducing the risk of flooding and associated damage;
- Reducing stream channel and stream bank erosion;
- Increasing available water and stream flow duration by holding water in stream banks and aquifers;
- Supporting a diversity of plant and wildlife species, including endangered species; and
- Maintaining habitat for healthy fish populations, including endangered species.

In its 1997 *Public Records from Public Lands* document (BLM 1997b), the BLM states that:

> While commodity-related activities on the public lands generate economic benefits, so too does the conservation of public land resources. *Money Magazine's* annual survey of the best places to live in the U.S. routinely ranks such criteria as clean water and clean air high on the list, along with proximity to lakes, mountains, and rivers. Drawn by these environmental values, many of which are associated with the public lands, companies and individuals are moving to the West.

The *DEIS for Riparian and Aquatic Habitat Management in the Albuquerque Field Office – New Mexico* (BLM 1999) analyzed three alternatives for improving and protecting the riparian habitats included in this HMP. On the basis of this analysis, the Adaptive Management Alternative was determined to be the most effective approach for realizing the benefits of riparian habitat management. Therefore, adaptive management is the basis for the riparian and aquatic habitat management strategies prescribed in this HMP.

6 PUBLIC AFFAIRS

The following actions have been or will be taken to facilitate public awareness of the Albuquerque Riparian and Aquatic HMP:

- Notice of Intent to prepare the Albuquerque Riparian and Aquatic Habitat Management EIS was published in the *Federal Register* on October 30, 1998.

- Public Scoping Meetings were held in Cuba, New Mexico, November 17, 1998, and in Albuquerque, New Mexico, November 18, 1998.

- Copies of the scoping summary reports were mailed February 1, 1999, to everyone who expressed an interest in receiving them.

- Information about the riparian and aquatic habitat management planning process was posted at www.nm.blm.gov in March 1999.

- Copies of the *DEIS for Riparian and Aquatic Habitat Management in the Albuquerque Field Office – New Mexico* were mailed October 8, 1999, to everyone who expressed an interest in receiving them.

- Public Hearings were held in Cuba, New Mexico, November 17, 1999, and in Albuquerque, New Mexico, November 18, 1999.

- Copies of the FEIS and the HMP were mailed by October 2000 to everyone who expressed an interest in receiving them.

- A news release was issued in October 2000 to announce completion of the Albuquerque Riparian and Aquatic HMP.

- The New Mexico BLM Web site regarding the status of the Albuquerque Aquatic and Riparian HMP was updated in October 2000.

- A Presentation Kit for use in fiscal year 2001 and beyond was prepared to describe the significance of riparian habitat and what the BLM is doing to improve and protect it in the Albuquerque Field Office.

6 PUBLIC ATTACKS

7 COSTS AND FUNDING

Tables 3.2 through 3.4 identify the steps to be taken for improving and protecting all of the identified riparian, wetland, and spring/seep areas in the Albuquerque Field Office. These steps are the basis for defining more specifically the work required for accomplishing the necessary improvement and protection of each area. As the work elements identified in Tables 3.2 through 3.4 are defined site specifically for projects in each area, cost estimates will be developed for use in budget formulation and justification. However, that level of project specificity and detail is not included in this HMP.

8 CONCURRENCE AND RECOMMENDED APPROVAL

This Proposed Habitat Management Plan has been prepared, reviewed, and approved by the undersigned parties.

Prepared by:

6/19/2000

Bureau of Land Management
Albuquerque Field Office

Date

Approved by:

6-19-00

Field Office Manager
Bureau of Land Management
Albuquerque Field Office

Date

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GLOSSARY

Allotment: An area of land designated and managed for grazing of livestock.

Animal Unit Month (AUM): The amount of forage necessary to sustain one cow and one calf or their equivalent (e.g., five sheep or goats) for one month.

Area of Critical Environmental Concern (ACEC): An area established through the planning process, as provided in the Federal Land Policy and Management Act, where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources or other natural systems or processes; or to protect life and afford safety from natural hazards.

Biota or Biotic: Living components of an ecosystem (e.g., plants and animals).

Browse: As noun: That part of the leaf, twig, fruit growth of shrubs, woody vines, and trees that is available for animal consumption. As verb: To consume browse.

Cultural Resources: Fragile and nonrenewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, work of art, architecture, and natural features important in human events.

Diversity: The relative degree of abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

Ecosystem: A complex, self-sustaining natural system that includes living and nonliving components of the environment and the circulation of matter and energy between organisms and their environment.

Endangered Species: Any species in danger of extinction throughout all or a significant portion of its range.

Environmental Assessment (EA): A concise public document prepared to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. An EA includes a brief discussion of the need for a proposal, the alternatives considered, the environmental impacts of the proposed action and alternatives, and a list of agencies and individuals consulted.

Environmental Impact Statement (EIS). A document that is prepared to analyze the impacts of a proposed project or action on the environment and is released to the public for comment and review. An EIS must meet the requirements of the National Environmental Policy Act and the Council on Environmental Quality and the directives of the agency responsible for the proposed project or action.

Federal Land Policy and Management Act of 1976 (FLPMA). Public Law 94-579, signed by the President on October 21, 1976. It establishes public land policy for the management of lands administered by the U.S. Bureau of Land Management (BLM). It specifies several key directions for the BLM, notably (1) management on the basis of multiple use and sustained yield; (2) preparation of land use plans to guide management actions; (3) public land management for the protection, development, and enhancement of resources; (4) public land retention in federal ownership; and (5) incorporation of public participation in reaching management decisions.

Field Office: The smallest administrative subdivision of the U.S. Bureau of Land Management (formerly called Resource Area).

GLOSSARY

Forage: All browse and herbaceous foods that are available to grazing animals.

Forb: Any herbaceous nonwoody plant that is not a grass or grasslike plant.

Habitat: A specific set of physical conditions that surround a single species, group of species, or large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Habitat Management Plan (HMP): A written and officially approved plan for a specific geographical area of public land that identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives, and outlines procedures for evaluating accomplishments.

Impact: The effect, influence, alteration, or imprint on the natural or human environment caused by an action.

Lentic: Standing water riparian habitats, such as lakes, ponds, or playas.

Lotic: Moving water riparian habitats, such as rivers, creeks, or springs.

Monitoring: Orderly process of collecting, analyzing, and interpreting resource data to evaluate progress toward meeting management objectives.

Multiple Use: A combination of balanced and diverse resource uses that considers long-term needs or renewable and nonrenewable resources, including recreation, rangeland, timber, minerals, watersheds, and wildlife, along with scenic, scientific, and cultural values.

National Environmental Policy Act of 1969 (NEPA). Public Law 91-190. It establishes environmental policy for the nation. Among other items, NEPA requires federal agencies to consider environmental values in decision-making processes.

Physiographic Province: An extensive region of similar geological structures and climates that share a common geomorphic history. It normally encompasses many hundreds of square miles and portrays similar qualities of soil, rock, slope, and vegetation.

Public Land: Any land or interest in land (outside of Alaska) whose surface and/or subsurface is owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

Rangeland: Land used for grazing by livestock and big game animals on which the vegetation is dominated by grasses, grasslike plants, forbs, or shrubs.

Raptor: Bird of prey with sharp talons and strongly curved beak (e.g., hawk, owl, vulture, eagle).

Resource Management Plan (RMP): A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The RMP planning system has been used by the U.S. Bureau of Land Management since 1980.

Riparian Area: A unique form of wetland that represents the transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with rivers and streams, glacial potholes, and shores of lakes and reservoirs with stable water levels are typical riparian areas.

Stream: General term for a body of water flowing in a natural channel, as distinct from a constructed channel such as a canal or irrigation ditch. Streams in natural channels and point

sources, such as springs and seeps, are classified as either being perennial, intermittent, or ephemeral. These water regimes are defined as follows:

- *Perennial* — A stream or water point source in which there is an uninterrupted surface or subsurface flow of water. Perennial waters are directly associated with a water table in the localities through which they flow. These areas generally maintain a vigorous presence, or high potential for riparian vegetation.

- *Intermittent (= Semiperennial/ Semiephemeral)* — A stream or water point source in which the flow of surface or subsurface water is regularly interrupted for a period of days to months. Semiperennial sources have shorter periods of interruption, days to weeks, and semiephemeral sources have no-flow periods of weeks to months. These areas maintain a variable amount of riparian vegetation. The vegetation may become restricted to very limited and discontinuous areas. These areas are generally more sensitive to disturbance and excessive use.

- *Ephemeral* — A stream or water point source that flows only in direct response to precipitation. The channel or point of exit is permanently above the local water table. These areas generally cannot, nor do they have the potential to, maintain riparian vegetation.

Threatened Species: Any species or significant population of that species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. This category usually includes only those species that have been recognized and listed as threatened by federal and state governments but may include species categorized as rare, very rare, or depleted.

Watershed: The total area above a given point on a waterway that contributes runoff water to the stream flow at that point.

Wetland: Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support and that, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wilderness Study Area (WSA): An area determined to have wilderness characteristics. Wilderness study areas are subject to interdisciplinary analysis through the U.S. Bureau of Land Management's land use planning system and public comment to determine their wilderness suitability. Suitable areas are recommended to the President and Congress for designation as wilderness.

Wildlife: All species of mammals, birds, invertebrates, amphibians, reptiles, or their progeny or eggs that, whether raised in captivity or not, are normally found in a wild state. Feral horses and burrows are excluded.